HEAT RECOVERY D.C INVERTER MULTI VRF

Installation and Operating Instruction Manual

This Manual is applicable to following outdoor units:

Basic Model：

GMV-Pdhm224W/Na-M GMV-Pdhm280W/Na-M

GMV-Pdhm335W/Na-M GMV-Pdhm400W/Na-M

GMV-Pdhm450W/Na-M

Combined Model：

GMV-Pdhm504W2/Na-M ～ GMV-Pdhm1800W4/Na-M

Please read this Manual carefully before installation and use.

Thanks for your selection of Gree Air Conditioner Unit. Before use, please read this instruction manual carefully and keep it properly to ensure correct use of this machine.

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Instruction to Users

☆ During using the unit under only-cooling /heating mode, the total capacity of indoor units which are running simultaneously shouldn't be more than that of outdoor unit, or else poor cooling/heating capacity of each indoor unit will be resulted in. Under principal-cooling /heating mode, the total capacity of indoor units as principal part which are running simultaneously shouldn't be more than that of outdoor units，or else poor cooling /heating capacity of each indoor unit will be resulted in.

☆ According to capacity of each indoor unit, an air switch (or fuse) to each indoor unit and a master switch to all indoor units should be installed. Each air switch, which is usually shut off, is used for short circuit protection and abnormal overload of corresponding indoor unit。The master switch is used for unified power supply for all indoor units or shut-off of power supply.

☆ For smooth start of air conditioner unit, the main power switch shall be put to "ON" position 8 hours before start.

☆ Upon receiving STOP signal from each indoor unit, the fan of related indoor unit will continue to work for 20~70 seconds for purpose of utilizing the remaining cold air or heats in heat exchanger and also make preparations for next use. This is normal.

☆ During installation, do not mix communication lines with power cables. Be sure to separate them at minimum spacing over 20cm; otherwise it might result in communication problem.

☆ If switch between cooling / dry mode and heating mode of indoor unit occurs or if indoor unit is off under heating mode, brief flowing sound of refrigerants of cooling and heating mode exchanger may occur ,which is normal.

☆ Install the cooling and heating mode exchanger in the place like corridor where noise requirement is correspondingly lenient, furthermore, it should be installed in ceiling with good sound insulation. Avoid installing it in the place like bedroom, ward or office where low noise is required.

☆ An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring

☆electric supply tolerances: (220-240V)±10%, (50±1)Hz

☆humidity :30-95%

☆installation altitude :max 1000m

☆transport/storage temperature : -25-55°C.

☆ Main switch provided by end user: main switch handle should be black or gray and it can be locked in "OFF" position with padlock

☆ The main disconnection device should be explained in user manual and the height should be recommended as 0.6-1.7m. Over current protection is required (EN 60947-3, EN 60947-2)

Safety Considerations

1. Please read this manual carefully before use and operate correctly as instructed in the manual.
2. You are specially warned to note the two symbols below.

WARNING!: A symbol indicates that improper operation might cause human death or severe injuries.

CAUTIONS!: A symbol indicates that improper operation might cause human injury or property damage.

WARNING!

- Please seek an authorized repair station for installation work. Improper installation might cause water leakage, electric shock or fire.
- Please install at a place strong enough to support the weight of air conditioner unit. If not, the air conditioner unit might fall down and cause human injury or death.
- To ensure proper drainage, the drainage pipe shall be correctly installed according to installation instructions. Take proper measures for heat preservation to prevent condensing. Improper installation of pipes might cause leakage and wet the articles in the room.

  Do not use or store flammable, explosive, poisonous or other dangerous substances beside the air conditioner.
- In case of trouble (e.g. burnt smell), please immediately cut off the main power of air conditioner unit.
- Keep air flow to avoid shortage of oxygen in the room.
- Never insert your finger or any objects into air outlet and inlet grill.
- Please take constant care to check if the mounting rack is damaged after long use.
- Never modify the air conditioner. Please contact the dealer or professional installation workers for repair or relocation of the air conditioner.

Safety Considerations

Cautions!

- CAUTION FOR REFRIGERANT LEAKS

(Point to note connection with refrigerant leaks)

Introduction

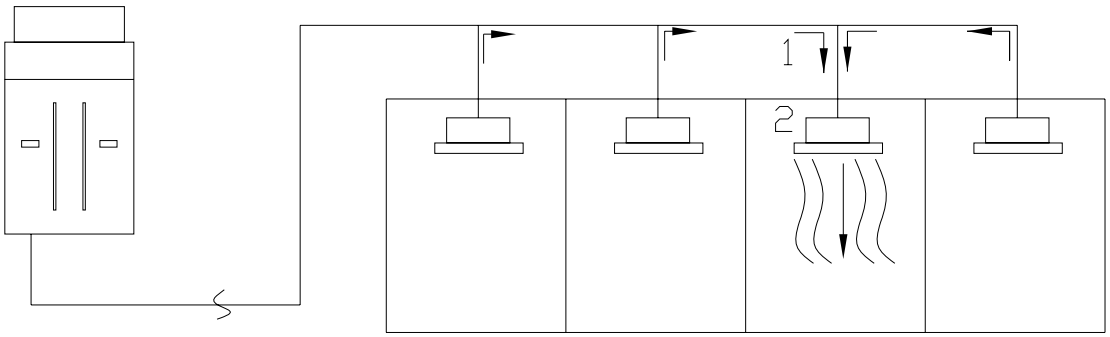
The installer and system specialist shall safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available. The GMV-Pdhm System like other air conditioning system uses R410A as refrigerants.R410A itself is an entirely safe non-toxic, non-combustible refrigerants. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room which is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance with the local applicable regulations and standards.

Maximum concentration level

The maximum charge of refrigerants and the calculation of the maximum concentration of refrigerants is directly related to the humanly occupied space in which it could leak.

The unit of measurement of the concentration is 1b/ft³(the weight in 1b of the refrigerant gas in 1 ft³ volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.



1).Direction of the refrigerant flow

2).Room where refrigerants leak has occurred (outflow of the entire refrigerants from the system).

Pay a special attention to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration .Check the maximum concentration level in accordance with steps 11 to 4 below and take whatever action is necessary to comply.

Safety Considerations

1. Calculate the amount of refrigerants (1b) charged to each system separately.

   Amount of refrigerants in a single unit system (amount of refrigerant with which the system is charged before leaving the factory)

   +

   Additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping)

   =total amount of refrigerants (1b) in the system.

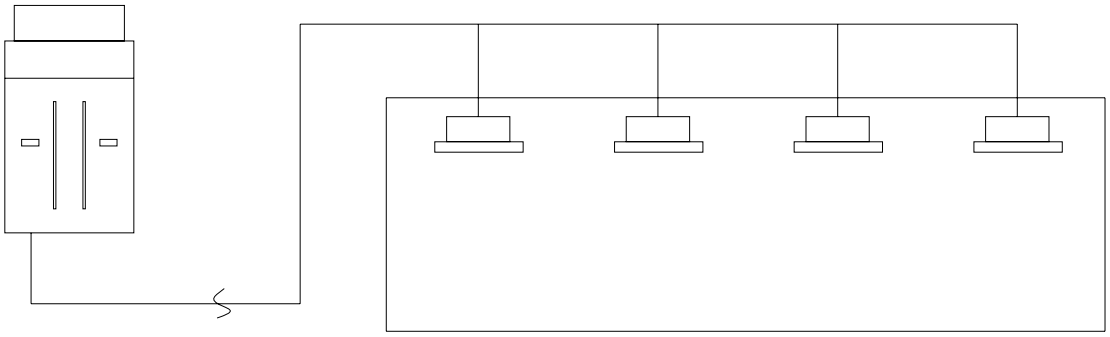
⚠ NOTE

Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerants with which each separate system is charged.

2. Calculate the smallest room volume(ft^3)

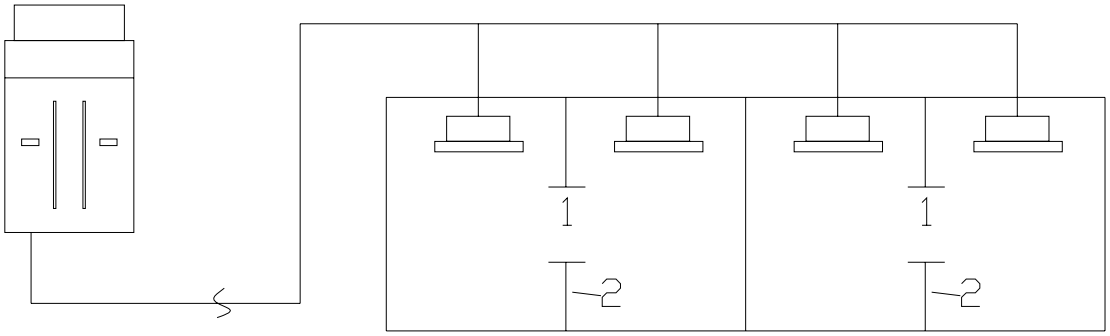
   Incase like the following, calculate the volume of (A), (B) as a single room or as the smallest room.

   A. Where there are no smaller room divisions



B. Where there is a room division but there is an opening between the rooms sufficiently large to permit a free flow of air back and forth.

Safety Considerations



1).opening between rooms.

2).partition.

(Where there is an opening without a door or where there are openings above and below the door which are each equivalent in size to 0.15% or more of the floor area.)

3).Calculate the refrigerant density using the results of the calculations in steps 1 and 2 above.

Total volume of refrigerants in the refrigerant system ≤ maximum concentration level(1b/ ft³)

Size (ft³) of smallest room in which there is an indoor unit installed. If the result of the above calculation exceeds the maximum concentration level then make similar calculations for the second then third smallest room and so unit the result falls short of the second then third smallest room and so until result falls short of the maximum concentration.

4).Dealing with the situations where the result exceeds the maximum concentration level and where the installation of a facility encounters problem then it will be necessary to revise the system. Please consult your GREE supplier.

- Before installation, please check the power supply for compliance with the ratings on nameplate. Check the power safety as well. (it shall be done by professionals)
- Before use, please check and confirm if the cables, drainage pipes and pipelines are correctly connected, hence to eliminate the risk of water leakage, refrigerants leakage, electric shock or fire(it shall be done by professionals)
- Main power must be securely earthed to ensure effective grounding of air conditioner unit and avoid the risk of electric shock. Please do not connect the earthing cable to coal gas pipe, water pipe, lightning rod or telephone line.
- Once started, the air conditioner shall not be stopped at least after 10 minutes or longer; otherwise service life of the unit will be affected.

Safety Considerations

- Do not let the child to operate the air conditioner unit.
- Do not operate the air conditioner unit with wet hands.
- Please disconnect the main power before cleaning the air conditioner or replacing the air filter.
- Please disconnect the main power if the air conditioner unit is out of use for a long period.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised so that they can not play with the appliance.
- Please do not expose the air conditioner unit directly under corrosive environment with water or moisture.
- Please do not put on or place any goods on air conditioner unit.
- After electrical installation, the air conditioner unit shall be energized for electrical leakage test. (it shall be done by professionals)

Selection of Installation Location and Precautions

● Selection of Installation Location for Air Conditioner Unit

The installation of air conditioner unit must be in accordance with national and local safety codes.

Installation quality will directly affect the normal use of air conditioner unit. The user is prohibited from installation himself. Please contact your dealer after buying this machine. Professional installation workers will provide installation and test services according to installation manual.

Do not power on until all installation work is completed.

● Selection of Installation Location for Indoor Unit

☆ Avoid exposing in sunshine.

☆ Ensure the hanger rod, ceiling and building structure have sufficient strength to support the weight of air conditioner unit.

☆ Drainage pipe is easy to connect out.

☆ Air inlet and outlet is not blocked.

☆ Indoor and outdoor connection pipes are easy to go outdoors.

☆ Do not install at a place where flammable or explosive goods exist or flammable or explosive gas might leak.

☆ Do not install at a place where there are corrosive gas, severe dust, salty fog, smoke or heavy moisture.

Select Installation Location of Outdoor Unit

☆ Outdoor unit must be installed on a firm and solid support.

☆ Outdoor unit shall be installed close to the indoor unit, hence to minimize the length and bends of cooling pipe.

☆ Avoid placing the outdoor unit under window or between two constructions, hence to prevent normal operating noise from entering the room.

☆ Air flow at inlet and outlet shall not be blocked.

☆ Install at a well-ventilated place, so that the machine can absorb and discharge sufficient air.

☆ Do not install at a place where flammable or explosive goods exist or a place where there are severe dust, salty fog and polluted air.

Do not install induced draught pipe at the inlet and outlet of the outdoor unit. When the air conditioner unit is generating heats indoors, the condensate water may flow from the base of outdoor unit. When outdoor air is below 0℃ (32℉), the condensate water will be frozen. Take care that the installation of outdoor unit shall not affect the heat radiation of the unit.

Selection of Installation Location and Precautions

Caution!

Installation at following positions might cause trouble to the air conditioner unit. If unavoidable, please contact Authorized Service Center.

①A place full of machine oil; ②A region with saline-sodic soil near the sea;; ③A place with sulphide gases (such as sulphur spring); ④A place with high frequency facilities, such as radio equipment, electric welder or medical equipment;; ⑤An environment with special conditions.

● Cable Layout

☆ Carry out installation in accordance with the state line layout rules.

☆ The power supply must be of rated voltage of the unit and special electrical line for air-conditioning.

☆ Please do not pull the power cord violently.

☆ All electrical installation shall be carried out by professional technicians in accordance with the local laws and regulations.

☆ The diameter of flexible power cable must be large enough; damaged flexible power cable and connection cable must be replaced by flexible cables for such special purpose.

☆ Ensure that safe grounding and the grounding wire shall be connected with the special grounding equipment of the building and must be installed by professional technicians. In the fixed line there must be an electrical leakage protection switch and an air switch with sufficient capacity (refer to the following table). The air switch shall also have the magnetic tripping and thermal tripping functions to achieve protection of both short-circuit and overload.

Selection of Installation Location and Precautions

Model	Power supply (V,Ph,Hz)	Capability of circuit breaker (A)	Min. sectional area of earth lead (mm^2)	Min. sectional area of power cord (mm^2)	The number of the cord(N)
GMV-Pdhm224W/Na-M	380~415,3 ,50	32	6.0	6.0	5
GMV-Pdhm280W/Na-M	380~415,3 ,50	32	6.0	6.0	5
GMV-Pdhm335W/Na-M	380~415,3 ,50	40	10.0	10.0	5
GMV-Pdhm400W/Na-M	380~415,3 ,50	40	10.0	10.0	5
GMV-Pdhm450W/Na-M	380~415,3 ,50	40	10.0	10.0	5
GMV-Pdhm504W2/Na-M	380~415,3 ,50	63	25.0	25.0	5
GMV-Pdhm560W2/Na-M	380~415,3 ,50	63	25.0	25.0	5
GMV-Pdhm615W2/Na-M	380~415,3 ,50	80	35.0	35.0	5
GMV-Pdhm680W2/Na-M	380~415,3 ,50	80	35.0	35.0	5
GMV-Pdhm730W2/Na-M	380~415,3 ,50	80	35.0	35.0	5
GMV-Pdhm800W2/Na-M	380~415,3 ,50	80	35.0	35.0	5
GMV-Pdhm850W2/Na-M	380~415,3 ,50	80	35.0	35.0	5
GMV-Pdhm900W2/Na-M	380~415,3 ,50	80	35.0	35.0	5
GMV-Pdhm960W3/Na-M	380~415,3 ,50	100	50.0	50.0	5
GMV-Pdhm1010W3/Na-M	380~415,3 ,50	100	50.0	50.0	5
GMV-Pdhm1065W3/Na-M	380~415,3 ,50	125	70.0	70.0	5
GMV-Pdhm1130W3/Na-M	380~415,3 ,50	125	70.0	70.0	5
GMV-Pdhm1180W3/Na-M	380~415,3 ,50	125	70.0	70.0	5
GMV-Pdhm1250W3/Na-M	380~415,3 ,50	125	70.0	70.0	5
GMV-Pdhm1300W3/Na-M	380~415,3 ,50	125	70.0	70.0	5
GMV-Pdhm1350W3/Na-M	380~415,3 ,50	125	70.0	70.0	5
GMV-Pdhm1410W4/Na-M	380~415,3 ,50	160	95.0	95.0	5
GMV-Pdhm1460W4/Na-M	380~415,3 ,50	160	95.0	95.0	5
GMV-Pdhm1515W4/Na-M	380~415,3 ,50	160	95.0	95.0	5
GMV-Pdhm1580W4/Na-M	380~415,3 ,50	160	95.0	95.0	5
GMV-Pdhm1630W4/Na-M	380~415,3 ,50	160	95.0	95.0	5
GMV-Pdhm1700W4/Na-M	380~415,3 ,50	160	95.0	95.0	5
GMV-Pdhm1750W4/Na-M	380~415,3 ,50	160	95.0	95.0	5
GMV-Pdhm1800W4/Na-M	380~415,3 ,50	160	95.0	95.0	5

Note：The specification of power cord mentioned hereby is defined as the required specification when wiring with BV single core cable (2 ~ 4 pieces) under the cover of PVC pipe, and environment temperature shall be at 40℃; Air switch shall be selected according to 40℃ temperature condition, and shall in “D” type. if the installation conditions on site change, please consider the modification on the required specification of Power cord and Air switch, according to the specification manual provided by manufacture.

● Grounding Requirement

☆ As air-conditioning unit is of Class 1 electrical appliance, reliable grounding measures must be taken for

it.

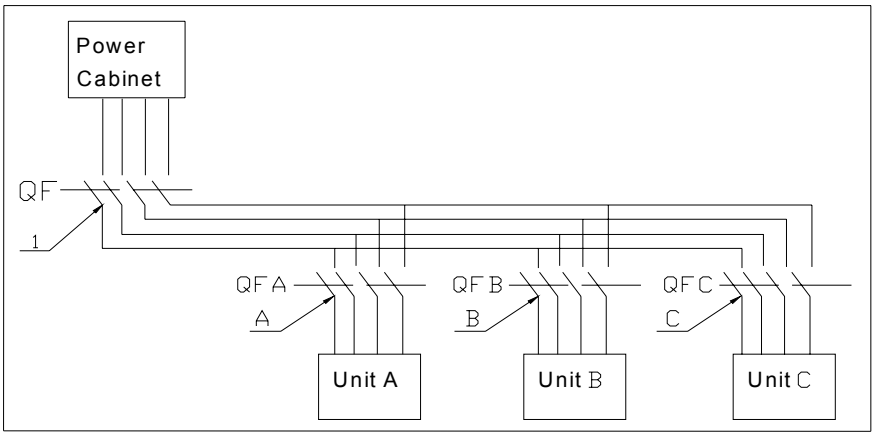
☆ The double color (yellow and green) cable inside the unit is specially used for grounding, so it shall not be used for other purposes nor can it be cut. Do not tighten with tapping screws; otherwise it might cause risk of electric shock.

☆Installation of earth resistance should be in accordance with local standards.

The user power supply shall have reliable grounding terminal. It is prohibited to connect the grounding wire to the following items:

① Water Supply Pipe ②Gas Pipe ③Sewage Pipe ④Lightning Rod or Earth Line of Phone ⑤Other positions that are considered to be unreliable by professionals.

- **Connection of power cord**



Selection of Installation Location and Precautions

Power Supply Specification of Indoor Units

Sheet A: Circuit breakers below indicate total capacity of circuit breakers which are corresponding to indoor units connecting general supply in the same system.

Total Capacity of the indoor unit	Capacity of the Circuit breaker	Min. Sectional Area of Power Cord (mm^2)	Min. Sectional Area of Earth lead (mm^2)
10A 以下	10	1.5	1.5
20～10A	20	4.0	4.0
32～20A	32	6.0	6.0
40~32A	40	10.0	10.0
50~40A	50	16.0	16.0
63~50A	63	35.0	16.0
80~63A	80	35.0	16.0
100~80A	100	50.0	25.0
125~100A	125	70.0	35.0

Note: Specific parameters can be revised according to conditions and laws of users' country

Circuit breakers are closed in normal condition,which are for the purpose of short circuit protection for indoor units and abnormal overload. All terminals of circuit breakers should be connected to a same general supply switch for cutting power supply of all indoor units.

Indoor Unit Model	Capacity of the Circuit breaker	Min. Sectional Area of Earth lead (mm^2)	Min. Sectional Area of Power Cord (mm^2)
Wall-mounted Units	10	1.0	1.0
Duct Type Units	10	1.0	1.0
Cassette Type Units(Heat Pump or Cooling Only)	10	1.0	1.0
One-way Cassette Type units	10	1.0	1.0
Floor-standing Units	10	1.0	1.0

Selection of Installation Location and Precautions

If choose the indoor unit with auxiliary electric heater which decides the capacity of circuit breaker. Below is the circuit breaker models which should be specially configured.

Model of Indoor Units(with auxiliary electric)	Capacity of Circuit Breaker	Min. Sectional Area of Earth lead (mm^2)	Min. Sectional Area of Power Cord (mm^2)
22、28、32、36 duct type units	10	1.0	1.0
40、45、50duct type units	13	1.5	1.5
56、63、71、80duct type units	20	2.5	2.5
90、100、112、125、140 duct type units	13	1.5	1.5
28、36、45、50 cassette type units	10	1.0	1.0
56、63、71 cassette type units	13	1.5	1.5
80、90、112、125 cassette type units	13	1.5	1.5
22、25、28、32、36 ultra-thin duct units	10	1.0	1.0
40、45、50 ultra-thin duct units	13	1.5	1.5
56、63、71 ultra-thin duct units	16	2.5	2.5

● Noise Control

☆ Install the unit at a well-ventilated place; otherwise it might result in decreased working capacity or higher noise.

☆ Install the unit securely on a base that can fully support its weight; otherwise vibration and noise might be caused.

☆ Install the outdoor unit so that the hot air or noise will not disturb your neighbors.

☆ Do not place any obstacle close the outlet of outdoor unit; otherwise it might result in decreased working capacity or higher noise.

☆ If the air conditioner gives out abnormal noise during use, please immediately contact your dealer.

● Accessories for Installation Use

For the accessories for installation of indoor units and outdoor units, please see the Packing List in the package.

Installation of Outdoor Unit

● Precautions on Installation of Outdoor Unit

To ensure the unit in proper function, selection of installation location must be in accordance with following principles:

☆ Outdoor unit shall be installed so that the air discharged by outdoor unit will not return and that sufficient space for repair shall be provided around the machine.

☆ Place of installation must be well ventilated so that the machine can absorb and discharge sufficient air. Ensure the air inlet and outlet of the machine are not blocked. If blocked, please clear off the obstacles blocking the air inlet or outlet.

☆ Place of installation shall be strong enough to support the weight of outdoor unit, and it shall be able to insulate noise and prevent vibration. Ensure that the wind and noise from the unit will not affect your neighbors.

☆ Outdoor unit must be lifted by using designated lifting hole. Take care to protect the unit during lift. To avoid rusting, do not knock the metal parts.

☆ Try best to avoid direct sunshine.

☆ Place of installation must be able to drain the rainwater and defrosting water.

☆ Place of installation must ensure that the machine will not be buried under snow or subject to the influence of rubbish or oil fog.

☆ To meet the noise and vibration requirements, the outdoor unit shall be installed with rubber damper or spring damper.

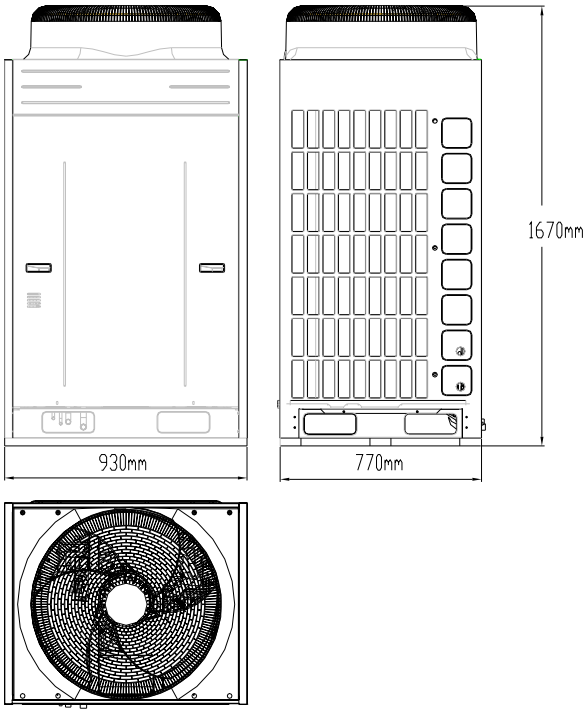
☆ Installation dimension shall be in accordance with the installation requirements in this manual. Outdoor unit must be securely fixed to the position.

☆ The unit shall be installed by professional technicians.

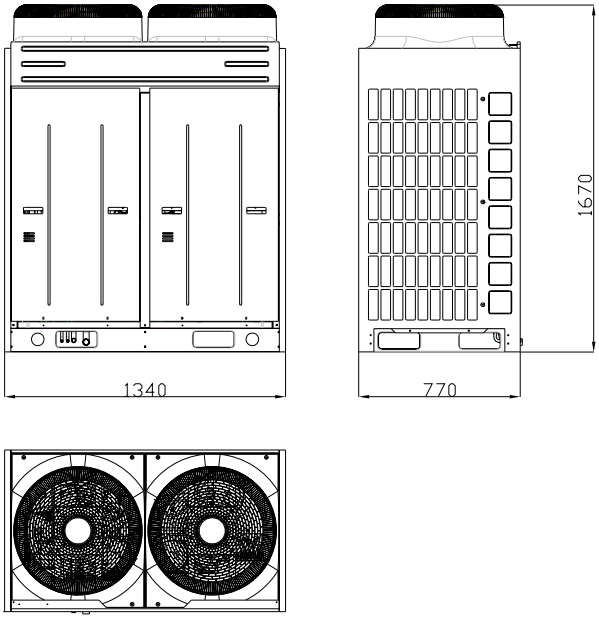
● Installation of Outdoor Unit

1. Outline Dimension of GMV-Pdhm224W/Na-M、GMV-Pdhm280W/Na-M

Installation of Outdoor Unit



Outline Dimension of GMV-Pdhm335W/Na-M、GMV-Pdhm400W/Na-M、GMV-Pdhm450W/Na-M



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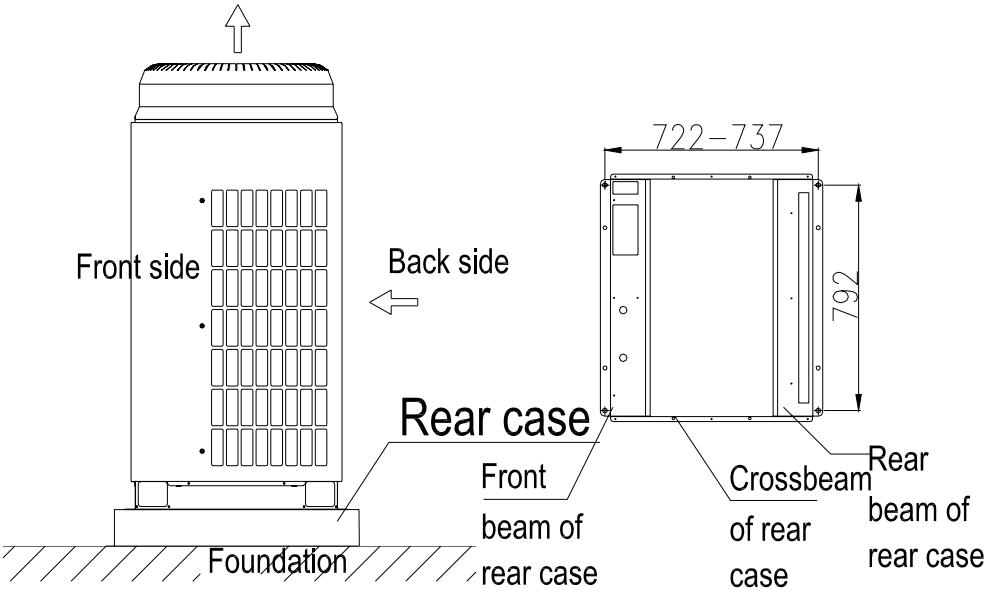
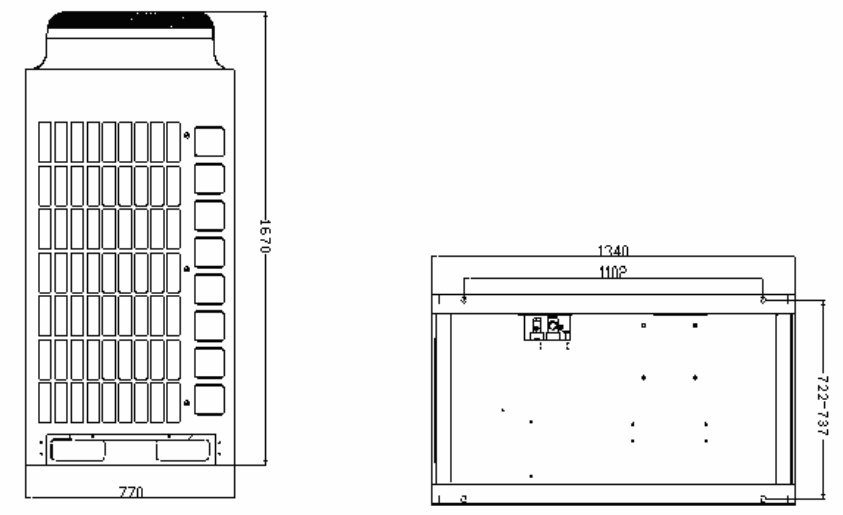
Installation of Outdoor Unit

2. Outdoor Unit Installation Holes of GMV-Pdhm224W/Na-M、GMV-Pdhm280W/Na-M



Outdoor Unit Installation Holes of GMV-Pdhm335W/Na-M、GMV-Pdhm400W/Na-M、GMV-Pdhm450W/Na-M



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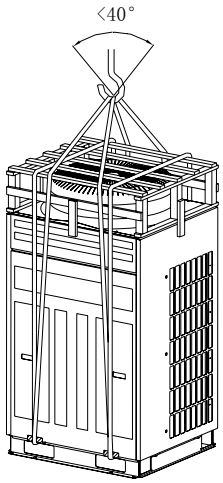
3.To handle the outdoor unit, enough length of two ropes must be used on four directions. To avoid displacement of unit center, the angle of the ropes must be kept lower than 40° during lift and movement. The below is illustration for lifting of GMV-Pdhm280W/Na-M outdoor unit, with which other outdoor unit series with outlet on top is similar.

Installation of Outdoor Unit



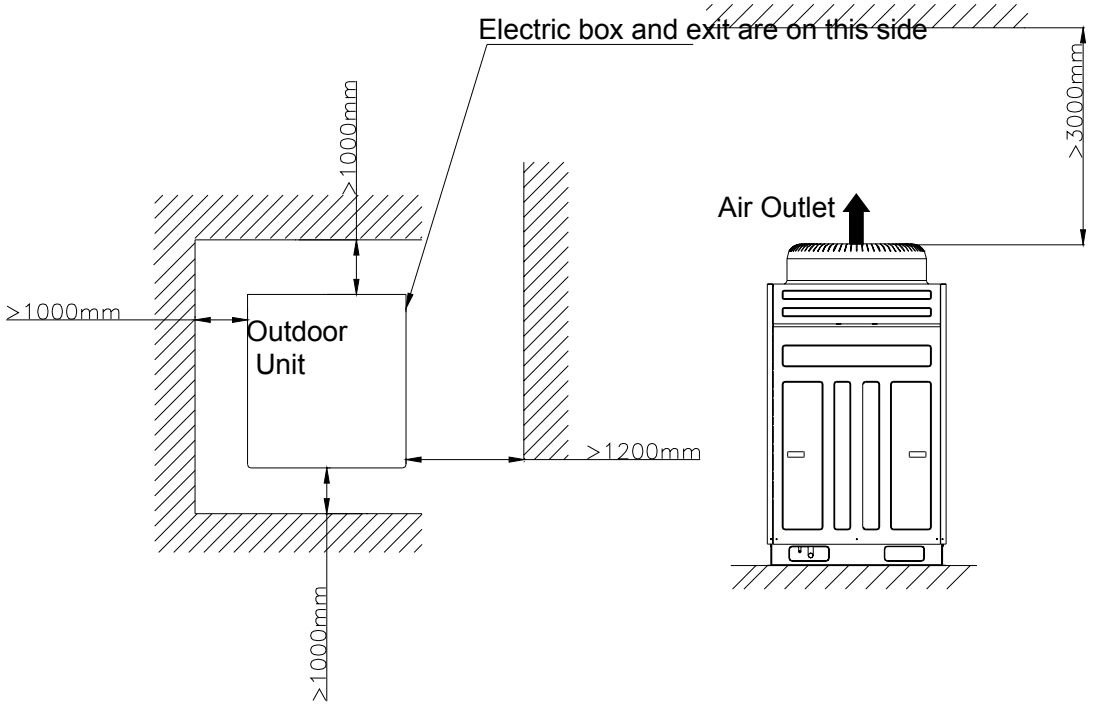
4. During installation, tighten the support and base of the unit by using M12 screws.

Installation of Outdoor Unit

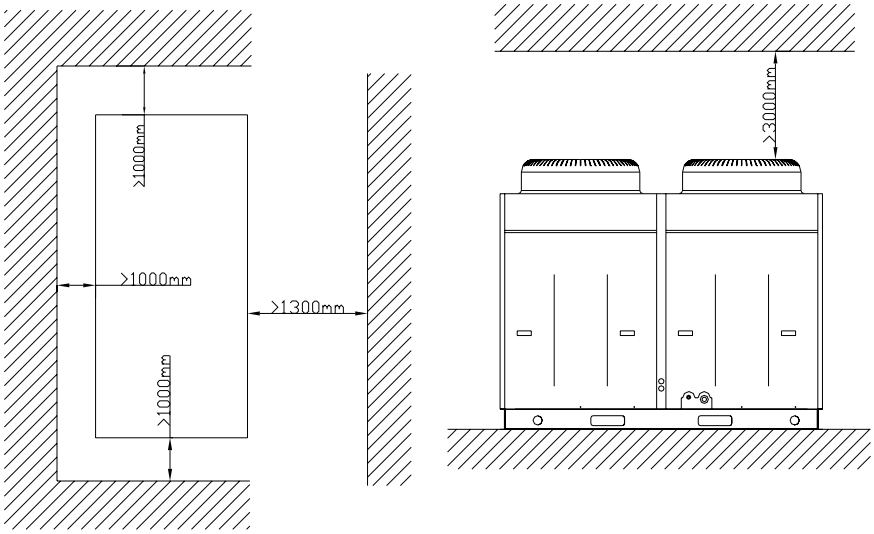
5. Space dimension for installation of the unit is shown below.

1) Clearance data of single unit

GMV-Pdhm224W/Na-M、GMV-Pdhm280W/Na-M



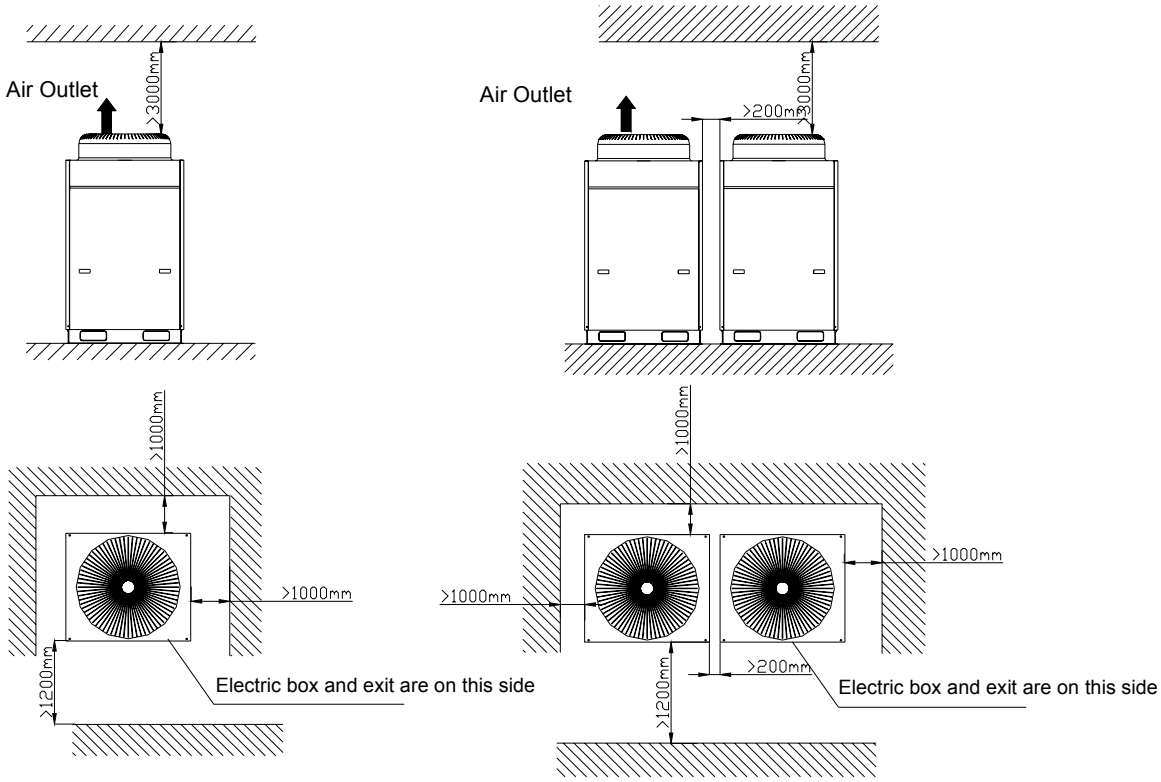
GMV-Pdhm335W/Na-M、GMV-Pdhm400W/Na-M、GMV-Pdhm450W/Na-M



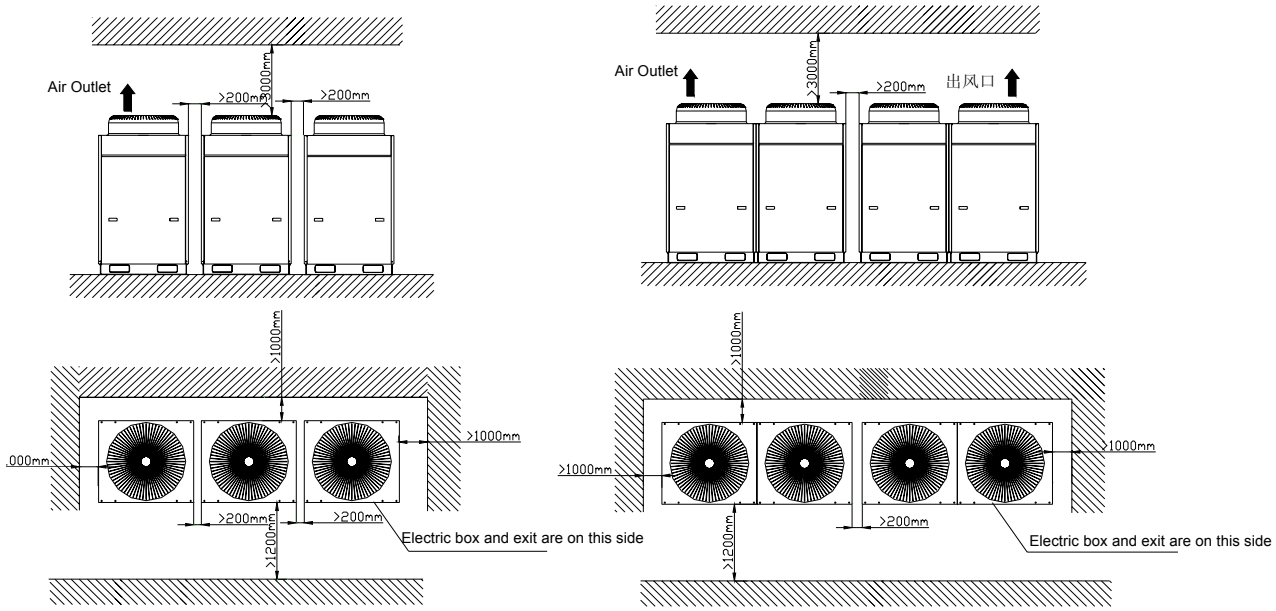
2) Clearance data of multiple unit

➢ Requirements for mounting space dimensions of single-fan and single-fan double-module outdoor units

Installation of Outdoor Unit

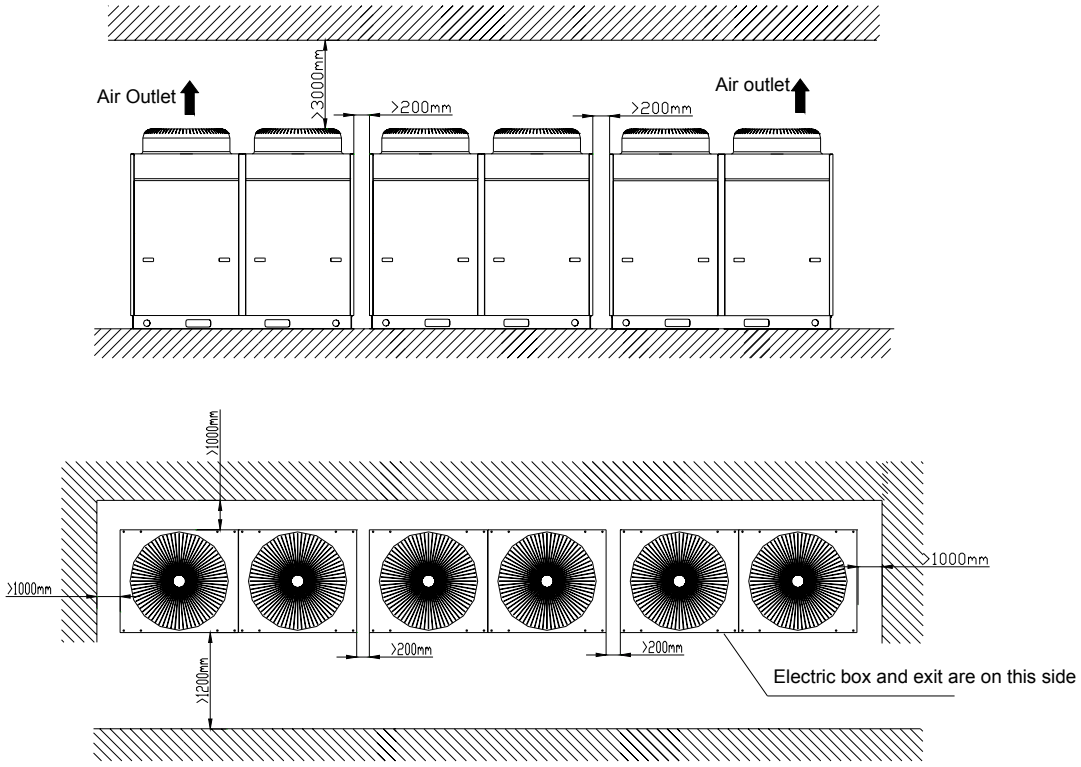


➢ Requirements for mounting space dimensions of single-fan three-module and double-fan double-module outdoor units



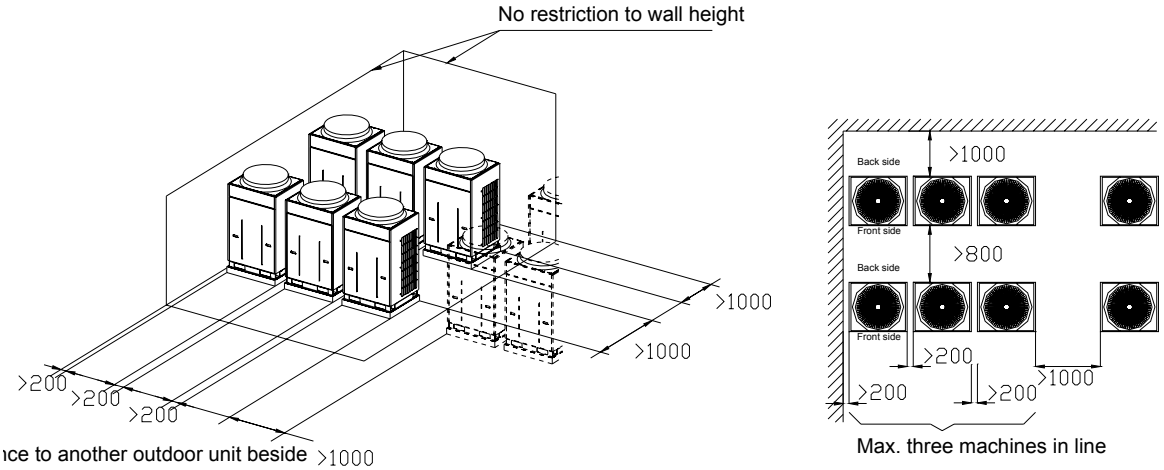
➢ Requirements for mounting space dimensions of double-fan three-module outdoor units

Installation of Outdoor Unit



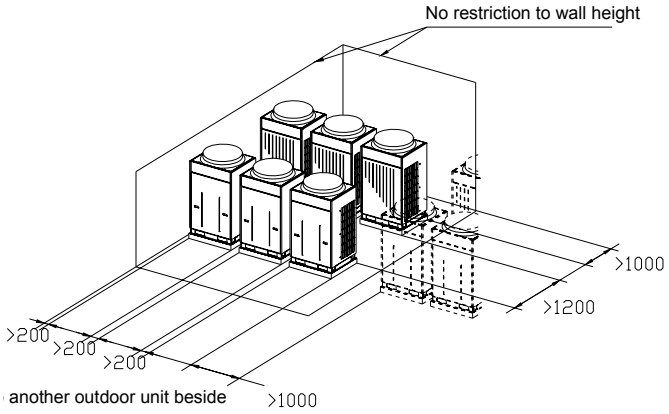
3).Take Monsoons and Snow into Consideration

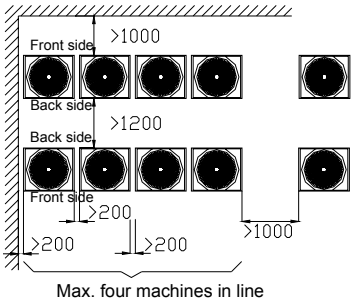
To ensure good ventilation, the top of unit shall be kept open and free of any obstructions. In case that the front side and left side (or right side) of the outdoor unit is open space, the unit shall be installed in the same direction.



Dimension of installation space for back-to-back installation is as below.

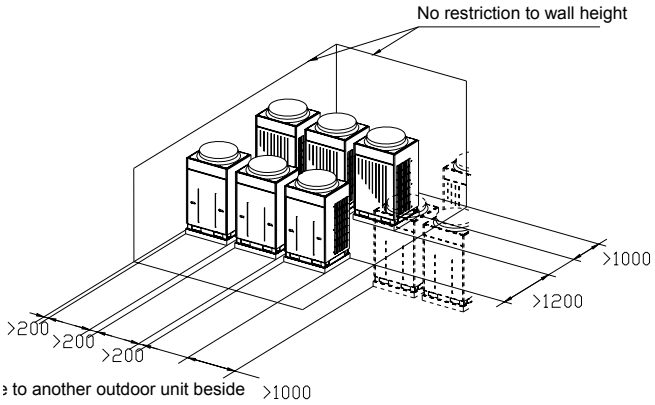
Installation of Outdoor Unit

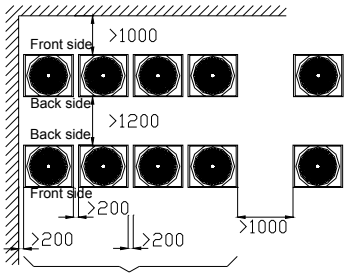




Max. four machines in line

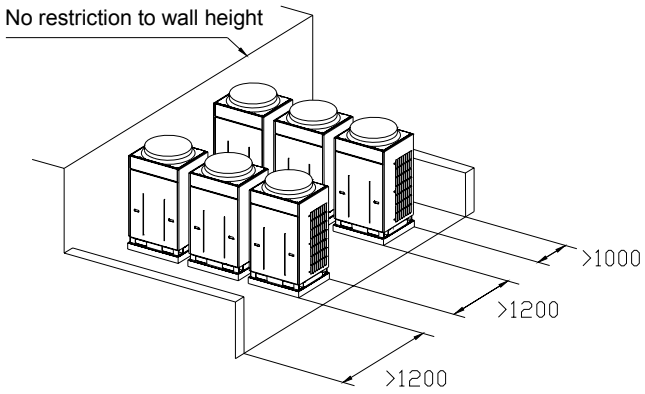
In case there are walls on four sides of the outdoor unit, it is suggested to install the unit in the same direction.

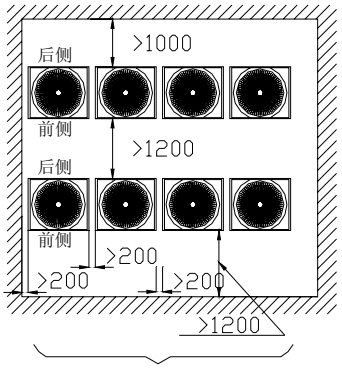




Max. Four machines in line

In case there are walls on four sides of the outdoor unit, it is suggested to install the unit in the same direction.

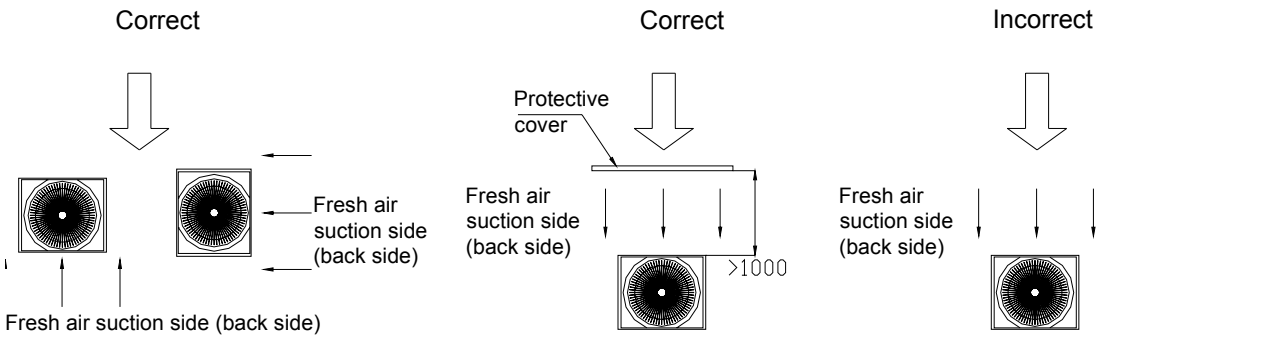




Max. four machines in line

4). **The monsoon shall be taken into consideration when installing the outdoor unit.**

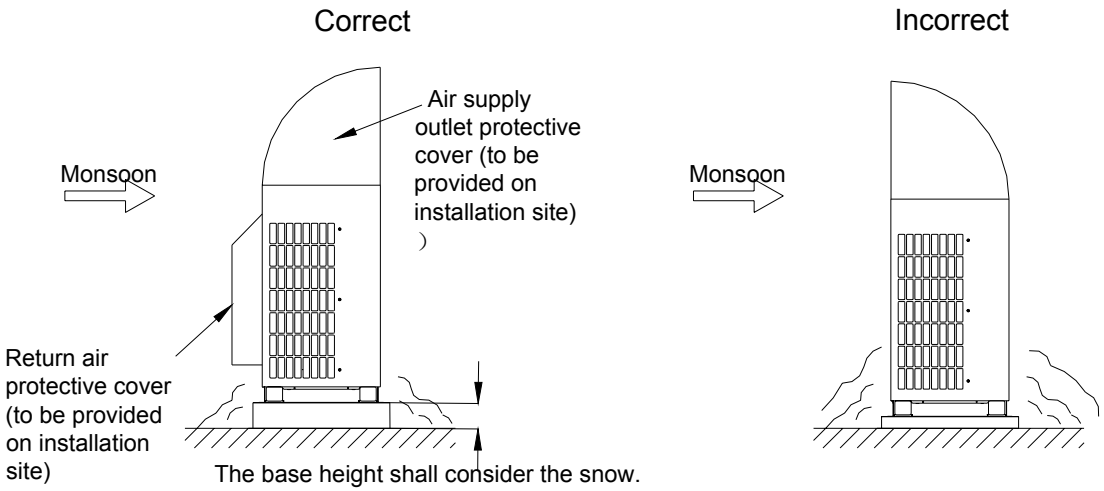
Installation of Outdoor Unit



The defrost time will be extended under this condition.

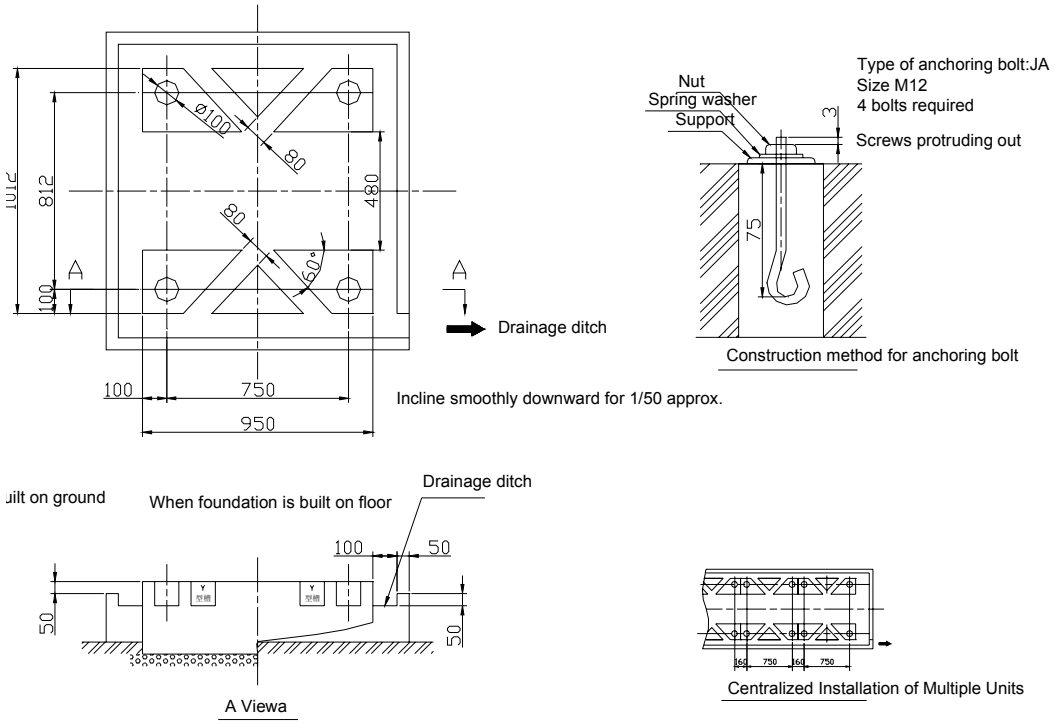
5). **The snow shall be taken into consideration when installing the outdoor unit.**

To prevent the snow from covering air supply outlet and air return inlet, it is required to use protective covers on them, and use a higher foundation base.


Correct
Incorrect
Monsoon
Air supply outlet protective cover (to be provided on installation site)
Monsoon
Return air protective cover (to be provided on installation site)
The base height shall consider the snow.

6.Outdoor unit shall be installed on a concrete base with10cm height

Installation of Outdoor Unit



Notes:

1) Concrete proportioning: Cement: sand: stone = 1: 2: 4. Meanwhile, 10 pieces of φ10mm reinforced steel bars shall be placed every 30mm.

2) Level the foundation surface with mortar and chamfer the sharp edge.
3) It is not needed to use gravel stone when the foundation is built on concrete floor, but the foundation surface must be deburred.
4) Drainage ditch shall be built around the foundation, so that the condensate from the equipment can be fully discharged.

5) To install the air conditioner on roof, please check the strength of building and take waterproof measures.

Installation of Outdoor Unit

●Electrical Cable Connection

⚠ Cautions:

☆ **Outdoor unit and indoor unit may be of unified power supply or separate power supply. But the indoor units must be of unified power supply.**

☆ **Be sure install a circuit breaker that can cut off the power of complete system.**

● **Power Cable Connection:**

1. Pass the cable though rubber ring.
2. Connect the power cable with the terminal marked “L1, L2, L3 & N” and earthing screws.
3. Fix the cables with cable clamp.

● **Connection of Distribution (Communication) Line:**

1. Open the electric box on outdoor unit.
2. Pass the distribution (communication) line into the base and through the rubber ring of electrical box.
3. Insert the distribution (communication) line into 4-pin terminal CN11 on outdoor unit circuit board.
4. Fix the distribution (communication) lines properly.
5. Put back the junction cover plate and tighten the screws. Cover up the panel.

Connection of Indoor and Outdoor Unit

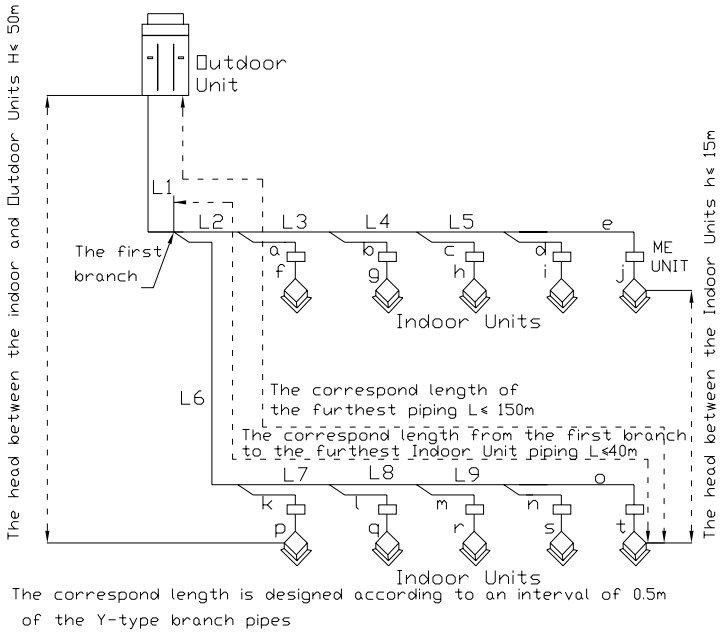
●Installation requirements of refrigerant piping

1. Specification of Connecting Pipes

R410A refrigerant system		
External Diameter(mm/inch)	Thickness(mm)	Type
Φ6.35(1/4)	≥0.8	0
Φ9.52(3/8)	≥0.8	0
Φ12.70(1/2)	≥0.8	0
Φ15.88(5/8)	≥1	0
Φ19.05(3/4)	≥1	1/2H
Φ22.2(7/8)	≥1.5	1/2H
Φ25.40(1/1)	≥1.5	1/2H
Φ28.60(9/8)	≥1.5	1/2H
Φ34.90(11/8)	≥1.5	1/2H
Φ38.10(12/8)	≥1.5	1/2H
Φ41.30(13/8)	≥1.5	1/2H
Φ44.45(7/4)	≥1.5	1/2H
Φ54.1(17/8)	≥1.5	1/2H

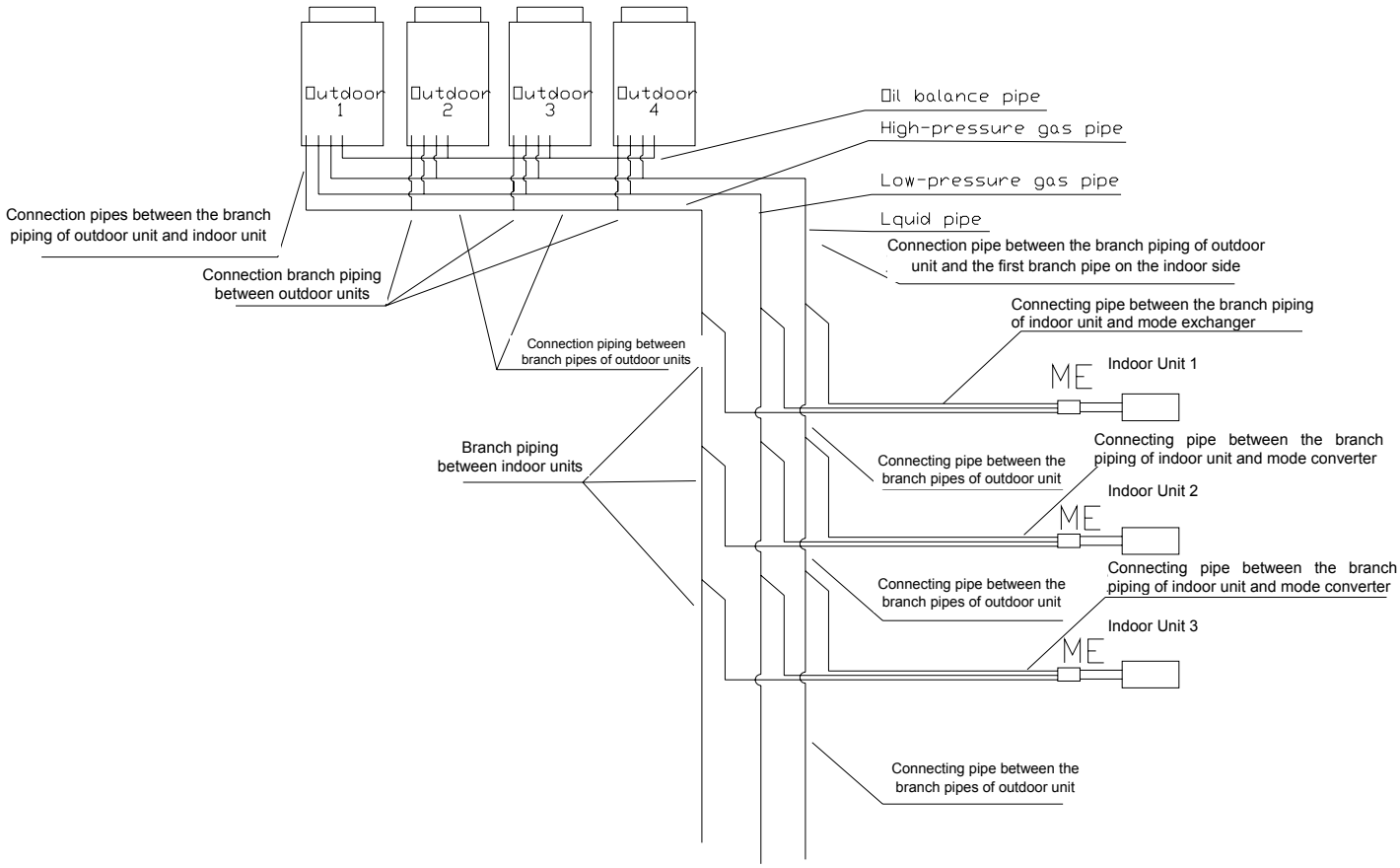
2. Allowable Length and Height Differences of the Connecting pipes between the Indoor and Outdoor Units

R410A refrigerant system		Allowable (m/ft) value	Fitting pipe
Total length (actual length) of fitting pipe		500/1640	$L_1+L_2+L_3+L_4+\ldots+L_9+a+b+\ldots+s+t$
Length of the furthest fitting pipe	Actual length	150/492	$L_1+L_6+L_7+L_8+L_9+o+t$
	Equivalent length	175/574	
Equivalent length of fitting pipe from the 1st branch joint to farthest indoor unit		40/131.2	$L_1+L_6+L_7+L_8+L_9+o+t$
Height differences between indoor unit and outdoor unit	Outdoor unit at upper	50/164	——
	Outdoor unit at lower	40/131.2	——
Height differences between indoor units		15/49.2	——



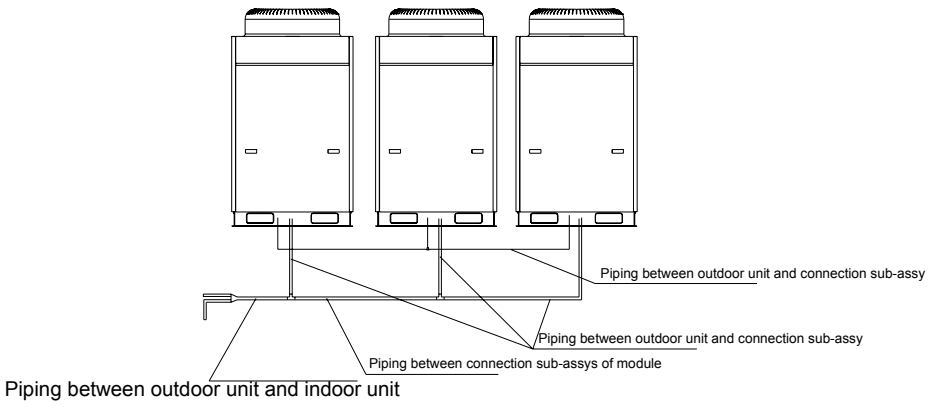
Connection of Indoor and Outdoor Unit

3. Selection of Diameter of Branch Pipe and Connection Pipe
System Piping Schematics:


Outdoor 1
Outdoor 2
Outdoor 3
Outdoor 4
Oil balance pipe
High-pressure gas pipe
Low-pressure gas pipe
Liquid pipe
Connection pipes between the branch piping of outdoor unit and indoor unit
Connection branch piping between outdoor units
Connection pipe between the branch piping of outdoor unit and the first branch pipe on the indoor side
Connecting pipe between the branch piping of indoor unit and mode exchanger
Connection piping between branch pipes of outdoor units
ME
Indoor Unit 1
Branch piping between indoor units
Connecting pipe between the branch pipes of outdoor unit
Connecting pipe between the branch piping of indoor unit and mode converter
Indoor Unit 2
Indoor Unit 3

1）. Selection of the branch piping between outdoor units

R410A refrigerant system	Total Capacity of the Outdoor Unit (C)	Model
Y-Type Branch Pipe	224≤C≤960	ML01R
	960＜C	ML02R


Piping between outdoor unit and connection sub-assy
Piping between outdoor unit and connection sub-assy
Piping between connection sub-assys of module
Piping between outdoor unit and indoor unit

Connection of Indoor and Outdoor Unit

The diameter of the piping (the main pipe) from the Outdoor Unit to the first branch joint
A. For a single-module system, the diameter of the piping from the Outdoor Unit to the first branch joint shall be selected according to the diameter of refrigerant piping for outdoor unit. The diameter of connection pipes for basic module outdoor unit is as below:

Basic Model	Piping Connections		
	Liquid (mm)	Suction Gas (mm)	Discharge Gas (mm)
GMV-Pdhm224W/Na-M	Φ9.5	Φ22.2	Φ19.1
GMV-Pdhm280W/Na-M	Φ9.5	Φ22.2	Φ19.1
GMV-Pdhm335W/Na-M	Φ12.7	Φ28.6	Φ19.1
GMV-Pdhm400W/Na-M	Φ12.7	Φ28.6	Φ22.2
GMV-Pdhm450W/Na-M	Φ12.7	Φ28.6	Φ22.2

B. If it is multi-module system,
The diameter of the branch piping between modules and outdoor unit shall be selected based on the diameter of the connection pipe of basic module outdoor unit. The diameter of the connection pipe of basic module outdoor unit is as below:

Basic Model	Piping Connections		
	Lquid pipe (mm)	Low-pressure gas pipe (mm)	High-pressure gas pipe (mm)
GMV-Pdhm224W/Na-M	Φ9.5	Φ22.2	Φ19.1
GMV-Pdhm280W/Na-M	Φ9.5	Φ22.2	Φ19.1
GMV-Pdhm335W/Na-M	Φ12.7	Φ28.6	Φ19.1
GMV-Pdhm400W/Na-M	Φ12.7	Φ28.6	Φ22.2
GMV-Pdhm450W/Na-M	Φ12.7	Φ28.6	Φ22.2

The diameter of the connection pipe between the branch pipes of basic module outdoor unit is as follows:

		Diameter of the refrigerant piping between the branch pipes of outdoor unit		
		Lquid pipe (mm)	High-pressure gas pipe (mm)	Low-pressure gas pipe (mm)
Total rated capacity Q of upstream outdoor unit	450≥Q	Φ12.7	Φ28.6	Φ28.6
	960≥Q＞450	Φ19.1	Φ34.9	Φ34.9
	1580≥Q＞960	Φ22.2	Φ41.3	Φ41.3
	Q＞1580	Φ25.4	Φ41.3	Φ54.1

Connection of Indoor and Outdoor Unit

The diameter of the piping from the end branch pipe of outdoor unit to the first branch pipe of indoor unit shall be selected according to the capacity of combined basic modules as below:

Multple Model	Uses combination of	Piping Connections		
		Lquid pipe (mm)	Low-pressure gas pipe (mm)	High-pressure gas pipe (mm)
GMV-Pdhm504W2/Na-M	GMV-Pdhm224W/Na-M ; GMV-Pdhm280W/Na-M	Φ15.9	Φ28.6	Φ22.2
GMV-Pdhm560W2/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm280W/Na-M	Φ15.9	Φ28.6	Φ28.6
GMV-Pdhm615W2/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm335W/Na-M	Φ15.9	Φ28.6	Φ28.6
GMV-Pdhm680W2/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm400W/Na-M	Φ15.9	Φ34.9	Φ28.6
GMV-Pdhm730W2/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ34.9	Φ28.6
GMV-Pdhm800W2/Na-M	GMV-Pdhm400W/Na-M ; GMV-Pdhm400W/Na-M	Φ19.1	Φ34.9	Φ28.6
GMV-Pdhm850W2/Na-M	GMV-Pdhm400W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ34.9	Φ28.6
GMV-Pdhm900W2/Na-M	GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ34.9	Φ28.6
GMV-Pdhm960W3/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm280W/Na-M ; GMV-Pdhm400W/Na-M	Φ19.1	Φ34.9	Φ28.6
GMV-Pdhm1010W3/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm280W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ41.3	Φ28.6
GMV-Pdhm1070W3/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm335W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ41.3	Φ34.9

GMV-Pdhm1130W3/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm400W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ41.3	Φ34.9
GMV-Pdhm1180W3/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ41.3	Φ34.9
GMV-Pdhm1250W3/Na-M	GMV-Pdhm400W/Na-M ; GMV-Pdhm400W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ41.3	Φ34.9
GMV-Pdhm1300W3/Na-M	GMV-Pdhm400W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ41.3	Φ34.9
GMV-Pdhm1350W3/Na-M	GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ19.1	Φ41.3	Φ34.9
GMV-Pdhm1410W4/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm280W/Na-M ; GMV-Pdhm400W/Na-M ; GMV-Pdhm450W/Na-M	Φ22.2	Φ44.5	Φ34.9
GMV-Pdhm1460W4/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm280W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ22.2	Φ44.5	Φ41.3
GMV-Pdhm1515W4/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm335W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ22.2	Φ44.5	Φ41.3
GMV-Pdhm1580W4/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm400W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ22.2	Φ44.5	Φ41.3

GMV-Pdhm1630W4/Na-M	GMV-Pdhm280W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ25.4	Φ54.1	Φ41.3
GMV-Pdhm1700W4/Na-M	GMV-Pdhm400W/Na-M ; GMV-Pdhm400W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ25.4	Φ54.1	Φ41.3
GMV-Pdhm1750W4/Na-M	GMV-Pdhm400W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ25.4	Φ54.1	Φ41.3
GMV-Pdhm1800W4/Na-M	GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M ; GMV-Pdhm450W/Na-M	Φ25.4	Φ54.1	Φ41.3

Note:

1）For outdoor unit with total rated capacity less than 20.0kW

If the length from outdoor unit to the farthest indoor unit is equal to or longer than 50m, bigger pipes shall be used as the liquid-side main pipe and the high and low pressure gas main pipes from outdoor unit to the first branch pipe of indoor unit. The max. diameter shall not be more than Φ54.1mm.

2） For outdoor unit with total rated capacity more than or equal to 20.0kW and less than 60.0kW

If outdoor unit is a single-unit system or a single-module system, and if the length from outdoor unit to the farthest indoor unit is longer than 70m, bigger pipes shall be used as the liquid-side main pipe and the high and low pressure gas main pipes from outdoor unit to the first branch pipe of indoor unit. The max. diameter shall not be more than Φ54.1mm.

If outdoor unit is a module parallel system, and if the length of the first branch pipe of outdoor unit to the farthest indoor unit is longer than or equal to 70m, bigger pipes shall be used as the liquid-side main pipe and the high and low pressure gas main pipes from the first branch pipe of outdoor unit to the first branch pipe of the indoor unit. The max. diameter shall not be more than Φ54.1mm.

3） For outdoor unit with total rated capacity more than 60.0.0kW

If outdoor unit is a single-unit system or a single-module system, and if the length from outdoor unit to the farthest indoor unit is longer than 90m, bigger pipes shall be used as the liquid-side main pipe and the high and low pressure gas main pipes from outdoor unit to the first branch pipe of indoor unit. The max. diameter shall not be more than Φ54.1mm.

If outdoor unit is a module parallel system, and if the length of the first branch pipe of outdoor unit to the farthest indoor unit is longer than or equal to 90m, bigger pipes shall be used as the liquid-side main pipe and the high and low pressure gas main pipes from the first branch pipe of outdoor unit to the first branch pipe of the indoor unit. The max. diameter shall not be more than Φ54.1mm.

Connection of Indoor and Outdoor Unit

3）. Selection of the branch pipe of indoor unit

Branch pipes between indoor units shall be selected based on the total capacity of downstream indoor units in accordance with the following table.

R410A refrigerant system	Total Capacity of the Downstream Indoor Unit (X)	Model
Y-Type Branch Pipe	X≤56	FQ01Na/A
	56＜X≤220	FQ02Na/A
	220＜X≤300	FQ03Na/A
	300＜X≤680	FQ04Na/A
	680＜X≤960	FQ05Na/A
	960＜X≤1350	FQ06Na/A
	1350＜X	FQ07Na/A

Note:

A. When the total capacity of downstream indoor units is higher than the capacity of outdoor unit, the branch pipe shall be selected according to the capacity of outdoor unit.

B. For branch pipes with capacity more than FQ05Na/A（including FQ05Na/A）, the ratio of the capacity values corresponding to the two branches after the jointing shall not exceed 3：1.

Example: To branch the pipe for which the total capacity code of downstream indoor unit is 960, the sum of the capacity code of downstream indoor units on any side after branching shall not be less than 240.

C. Only branch pipes FQ04Na/A, FQ03Na/A, FQ02Na/A and FQ01Na/A can be directly connected to indoor unit, and other branch pipes can not be directly connected to indoor unit. Branch pipe FQ03Na/A can not be used for connection of two or more indoor units with capacity more than 56 (including 56).

D. If no suitable pipe is available for branch piping, a transition pipe shall be added, or coupling of piping with the exterior of branch pipe shall be used for connection.

4）.The diameter of the piping between branch joints (the branch pipe) and the side branch pipes of the indoor unit.

Total capacity code of indoor units at downstream side	High-pressure gas pipe		Low-pressure gas pipe		Lquid pipe	
	mm	inch	mm	inch	mm	inch
C≤56	Φ12.7	1/2	Φ12.7	1/2	Φ9.52	3/8
56<C≤142	Φ12.7	1/2	Φ15.9	5/8	Φ9.52	3/8
142<C≤220	Φ15.9	5/8	Φ19.1	3/4	Φ9.52	3/8
220<C≤300	Φ19.1	3/4	Φ22.2	7/8	Φ9.52	3/8
300<X≤500	Φ25.4	1	Φ28.6	9/8	Φ12.7	1/2
500<X≤680	Φ28.6	9/8	Φ28.6	9/8	Φ15.9	5/8
680<X≤960	Φ28.6	9/8	Φ34.9	11/8	Φ19.1	3/4
960<X≤1350	Φ34.9	11/8	Φ41.3	13/8	Φ19.1	3/4
1350<X≤1580	Φ41.3	13/8	Φ44.5	7/4	Φ22.2	7/8
1580<X	Φ41.3	13/8	Φ44.5	7/4	Φ25.4	1

5）.The diameter of the piping from the branch joint (branch pipe) to ME unit

The diameter of copper pipe between branch pipe and ME box’s shall be equal to ME box’s connection pipe.

Connection of Indoor and Outdoor Unit

Model	Capacity of Indoor Unit	High-pressure Gas Pipe (mm)	Low-pressure Gas Pipe (mm)	Liquid Pipe (mm)
CHS22	22、25、28	Φ9.52	Φ9.52	Φ6
CHS36	32、36、40、45、50	Φ9.52	Φ12.7	Φ6
CHS71	56、63、71、80	Φ12.7	Φ15.9	Φ9.52
CHS90	90、100、112、125	Φ12.7	Φ15.9	Φ9.52

Note:

A. If the distance between indoor unit and nearest branch pipe is more than 10meter, then the cooper pipe should be one grade bigger.

B Only branch pipes FQ04Na/A, FQ03Na/A, FQ02Na/A and FQ01Na/A can be directly connected to indoor unit, and other branch pipes can not be directly connected to indoor unit. Branch pipe FQ03Na/A can not be used for connection of two or more indoor units with capacity more than 56 (including 56).

C. For indoor unit with rated capacity less than 5.0kW, if the length from branch piping to indoor unit is longer than or equal to 10m, a bigger pipe shall be used as liquid pipe from the branch piping to indoor unit.

6）. The diameter of the piping between mode exchanger and indoor unit

The refrigerant piping between mode exchanger and indoor unit shall have the same diameter as the refrigerant piping of indoor unit. The diameters of refrigerant piping for the indoor units of different capacities are as below:

Connection of Indoor and Outdoor Unit

Capacity code range of indoor unit (C)	Gas pipe	Liquid pipe
	mm(inch)	mm(inch)
C≤28	Φ9.52(3/8)	Φ6.35(1/4)
28＜C≤50	Φ12.7(1/2)	Φ6.35(1/4)
50＜C≤140	Φ15.9(5/8)	Φ9.52(3/8)

Note:

A. If the distance between indoor unit and nearest branch pipe is more than 10meter,then the cooper pipe should be one grade bigger.

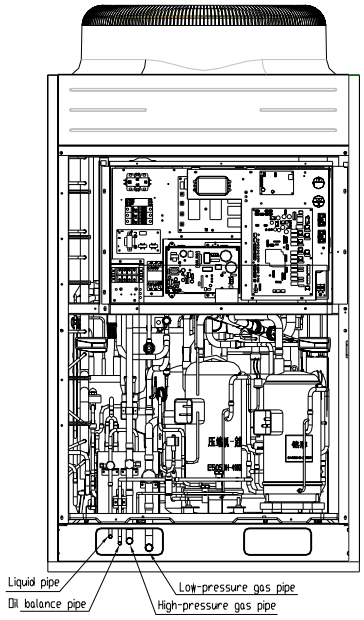
B. For indoor unit with rated capacity less than 5.0kW, if the length from branch piping to indoor unit is longer than or equal to 10m, a bigger pipe shall be used as liquid pipe from the branch piping to indoor unit.

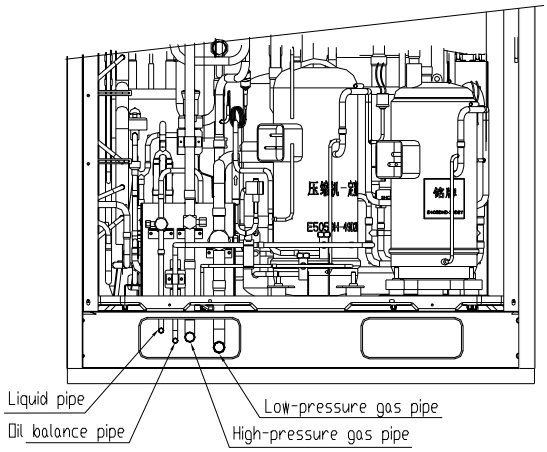
7) .The oil balance pipe installation between basic models.

When the outdoor unit is combined with two or more basic modules the oil balance pipe should be installed between basic models. It is connected with Φ12.7mm copper pipe,anΦ13.0mm oil balancing connection three-way valve is needed when there are more than two units combined together.

8）. Outdoor unit piping sequence diagram

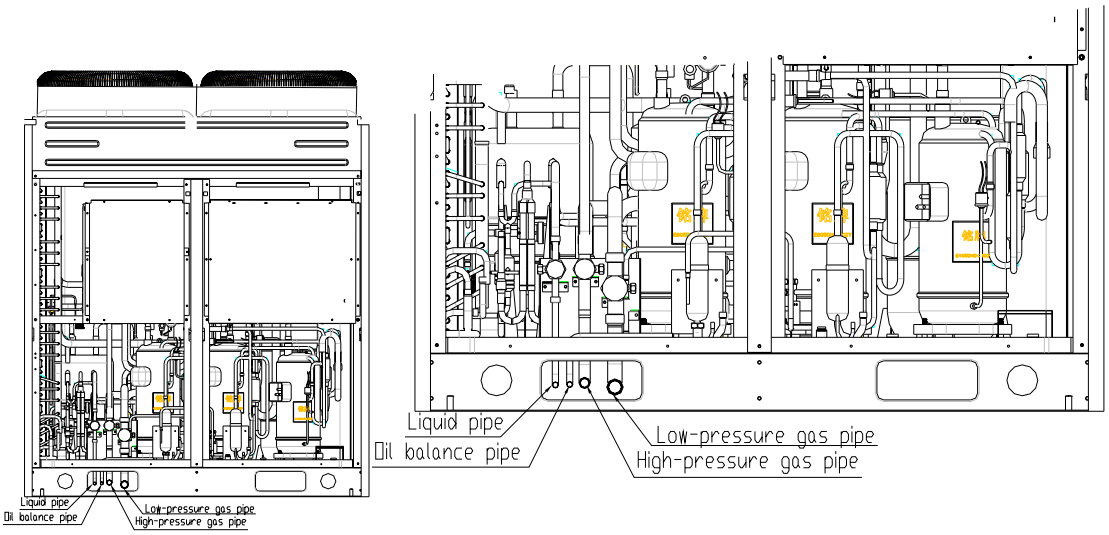
A.GMV-Pdhm224W/Na-M、GMV-Pdhm280W/Na-M



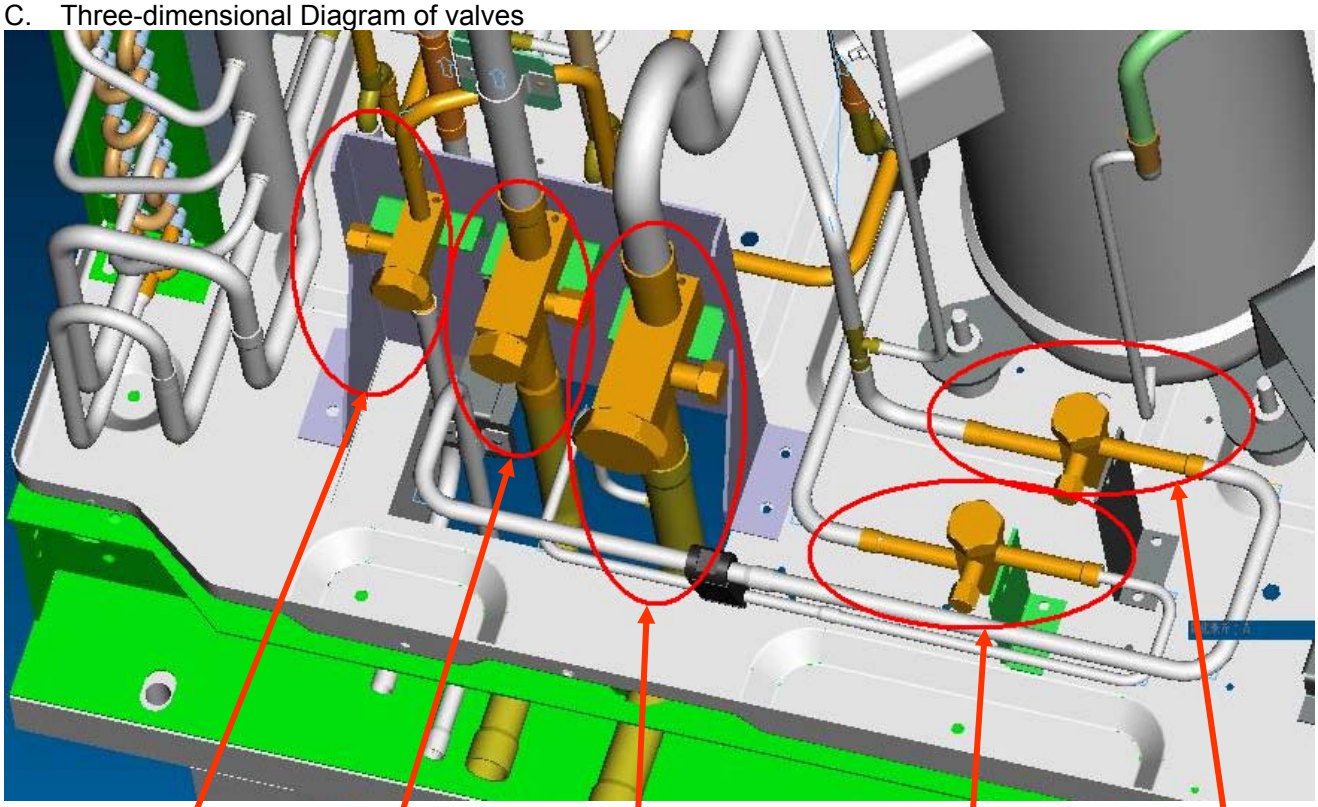


B.GMV-Pdhm335W/Na-M、GMV-Pdhm400W/Na-M、GMV-Pdhm450W/Na-M

Connection of Indoor and Outdoor Unit



C. Three-dimensional Diagram of valves



Cut-off valve of liquid pipes

Cut-off valve of high pressure gas pipes

Cut-off valve of low pressure gas pipe

Cut-off valve for Gas-liquid seperator of low pressure refrigerants cycle

Cut-off valve for equalized oil pipe

4. Design requirements for oil trap

If the height difference between the indoor unit and outdoor unit exceeds 6m, one oil trap shall be installed every 6m from lower to upper on the vertical section of high-pressure pipe and low-pressure pipe. The oil trap shall be fabricated into two U-type elbows or one return-type elbow. The height shall be 3~5 times the piping diameter.

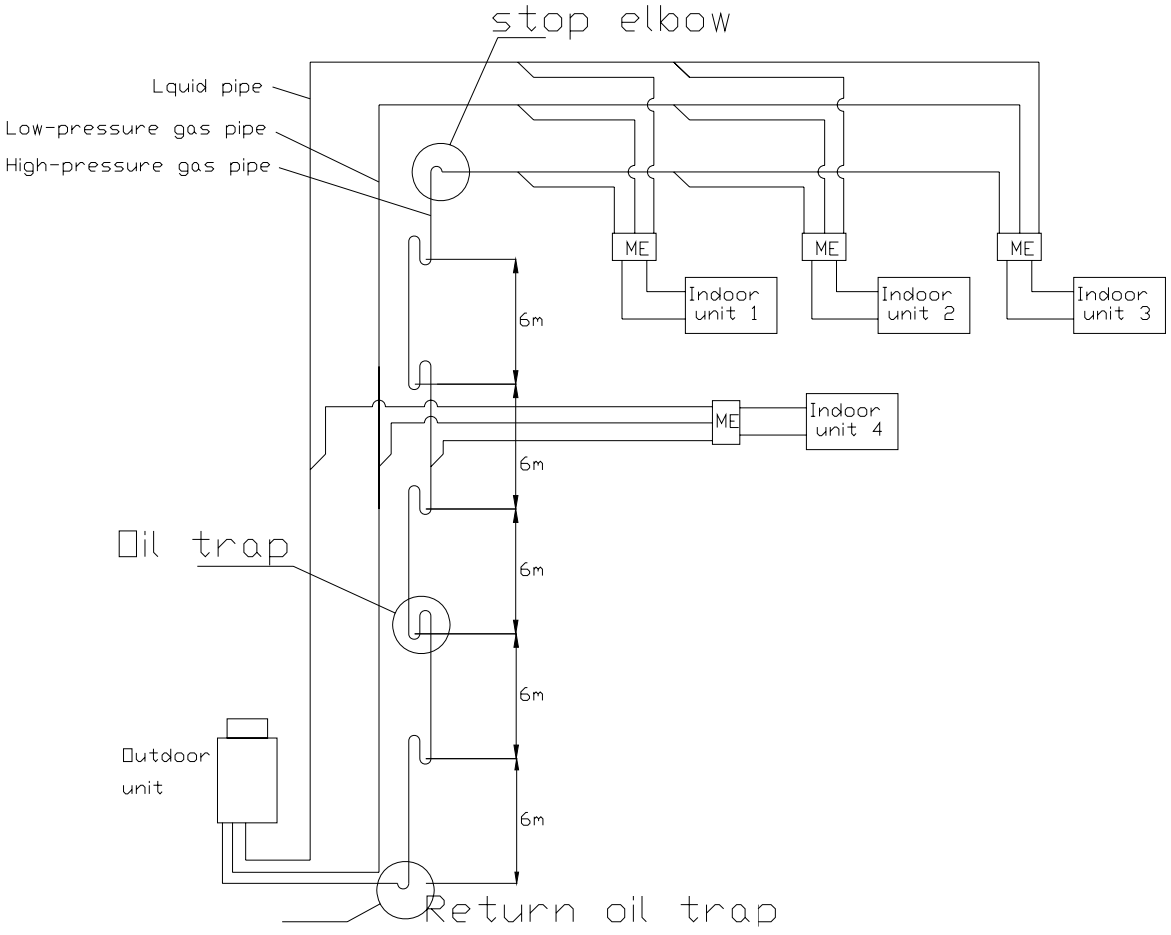
See below for details on installation and fabrication of oil trap.

a. The oil trap may be fabricated into U-type or return-type.

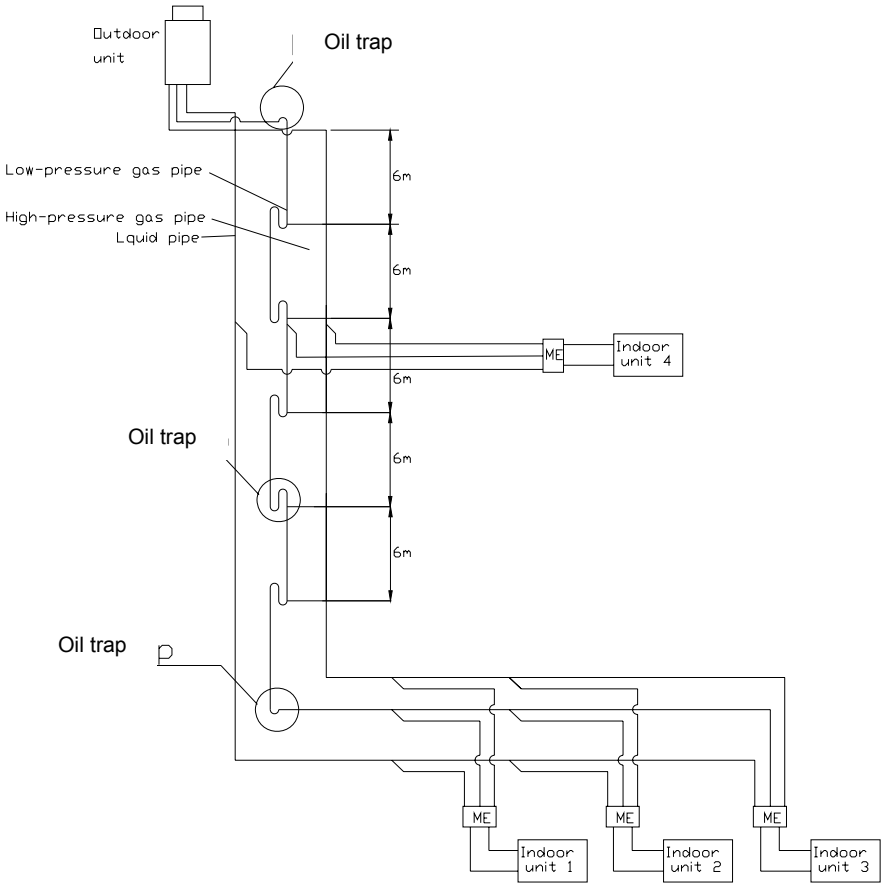
b. If outdoor unit is below indoor unit, it is not needed to install oil trap on the vertical pipe of low pressure gas piping, but oil trap must be mounted at the lowest place and at the highest place of the vertical pipe of high pressure gas piping.

c. If the outdoor unit is below the indoor unit, it is not needed to install oil trap at the highest or lowest position. If the outdoor unit is above the indoor unit, oil trap and stop elbow must be installed at the lowest and highest position of the vertical pipe. See the schematics below:

d. See the schematics below:

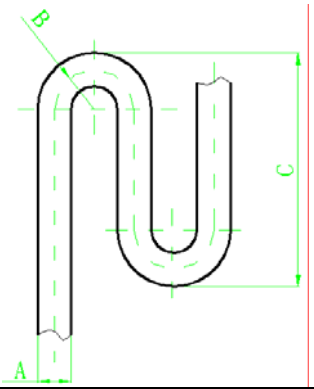


Connection of Indoor and Outdoor Unit



Outdoor unit is higher than indoor unit

e. Fabrication dimension of oil trap is as shown below:



A		B(mm)	C(mm)
mm	inch		
Φ19.0	3/4	≥34	≤150
Φ22.2	7/8	≥31	≤150
Φ25.4	1/1	≥45	≤150
Φ28.6	9/8	≥45	≤150
Φ34.9	11/8	≥60	≤250
Φ38.1	12/8	≥60	≤350
Φ41.3	13/8	≥80	≤450
Φ44.45	7/4	≥90	≤500
Φ54.1	17/8	≥90	≤500

5 INSTALLATION OF MODE EXCHANGER

5.1 Selection of installation site

The mode exchanger sub-assembly shall be installed close to the manhole or return air inlet(Notes: The precondition for installation close to return air inlet is that it will not affect the normal air inlet of the unit and can ensure repair of the components).

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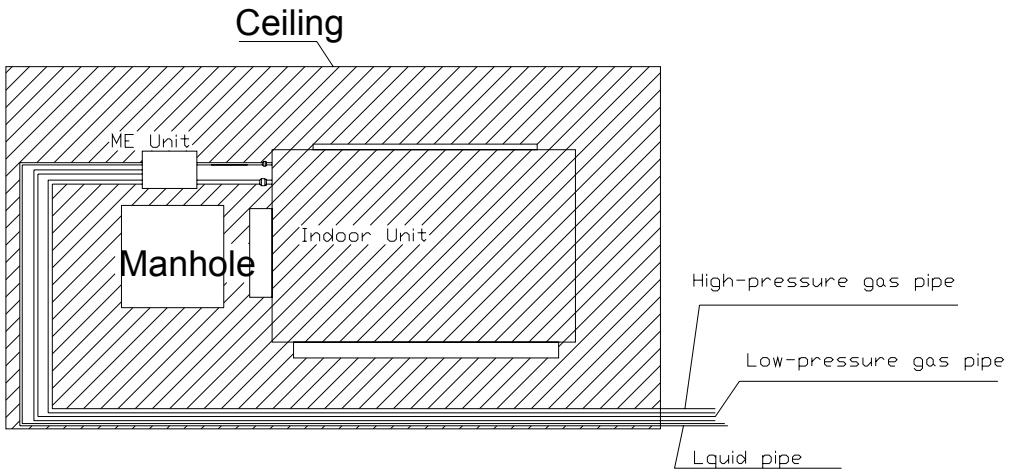
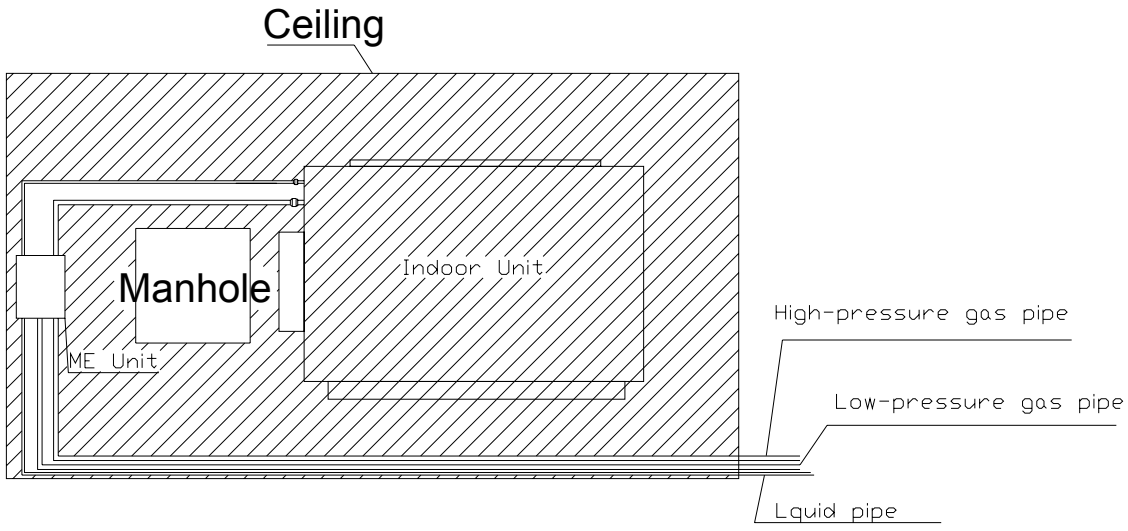
The following diagram is the standard position of the ME UNIT installation.

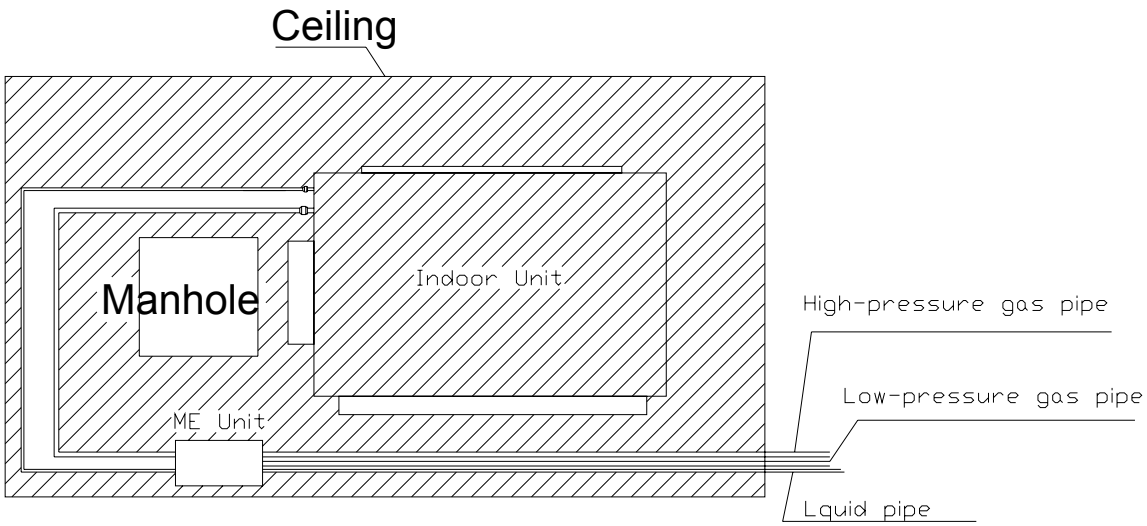


Standard position No.1



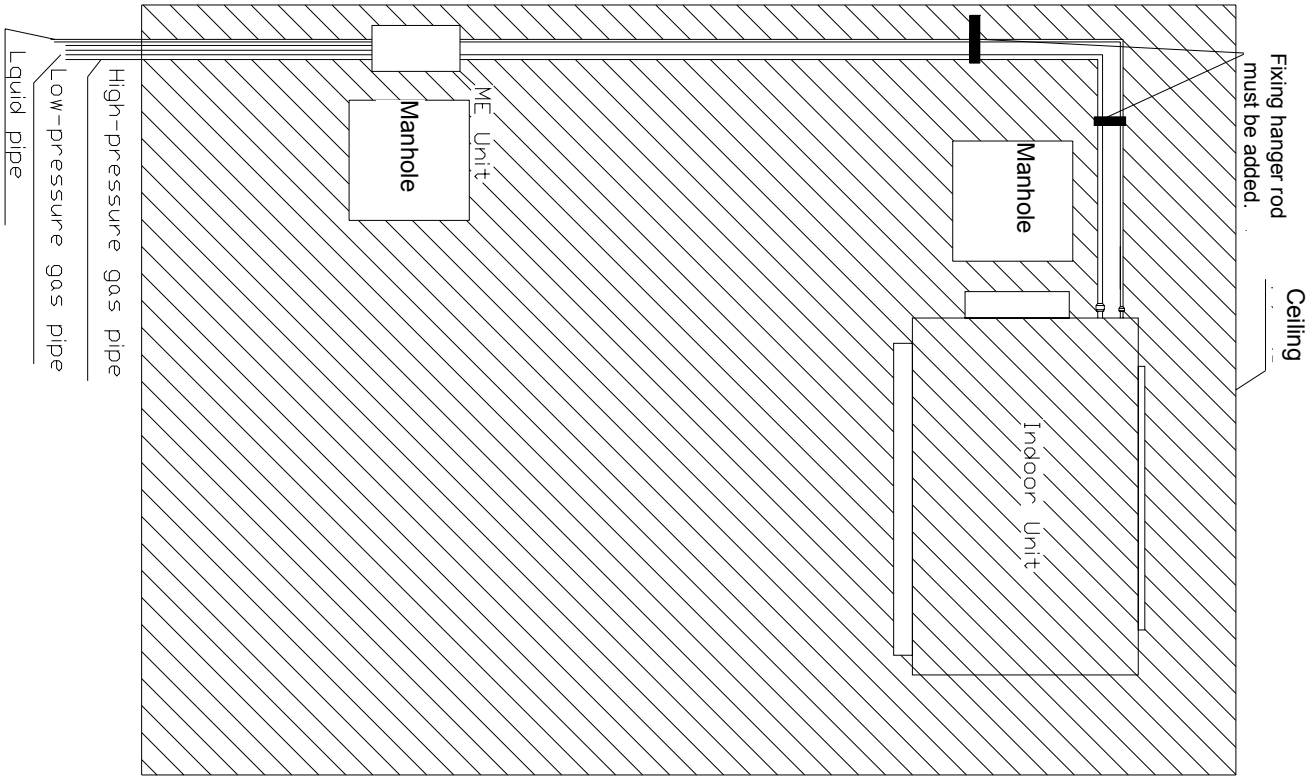
Standard position No.2

Connection of Indoor and Outdoor Unit



Standard position No.3

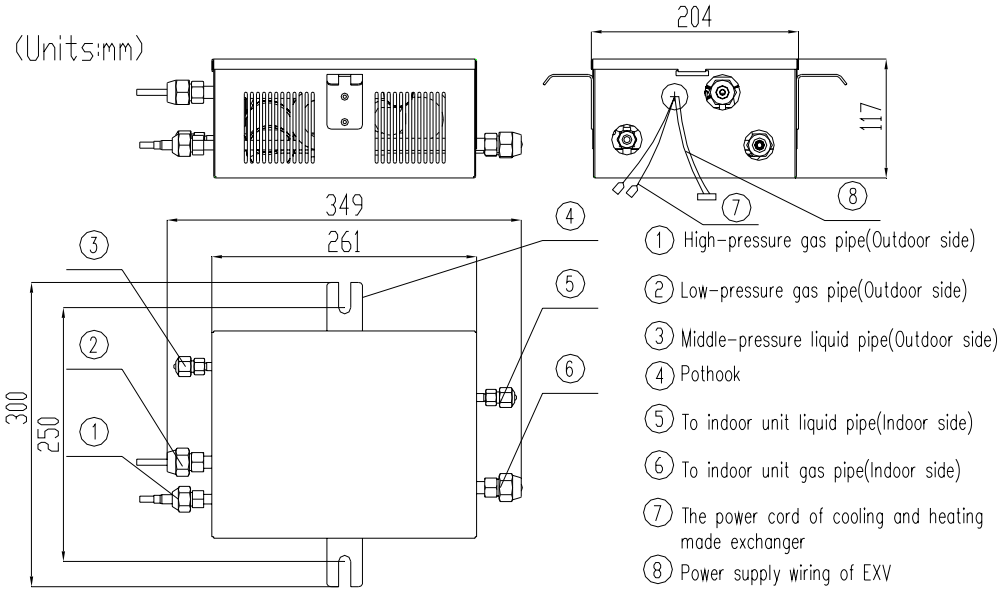
If the installation site of mode exchanger is far from the manhole of indoor unit due to construction structure, the mode exchanger must be provided with a manhole separately.



5.2 Dimensions Data

The dimensions data of CHS22~ CHS90:

Connection of Indoor and Outdoor Unit



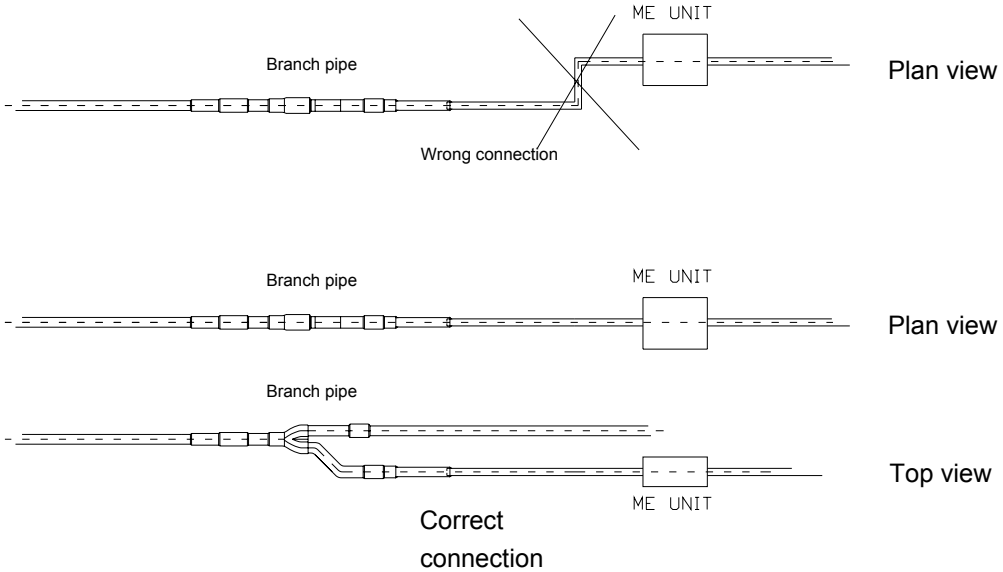
5.3 Cautions for Installation

A. The mode exchanger must be installed by using hanger rod. During installation, the components must be kept vertically upright according to the indicated direction;

B. During installation, enough space shall be considered for removal of the components. The pipe shall not be jammed between the components.

C. The distance of the component to the indoor unit along the pipe shall not be higher than 5000mm;

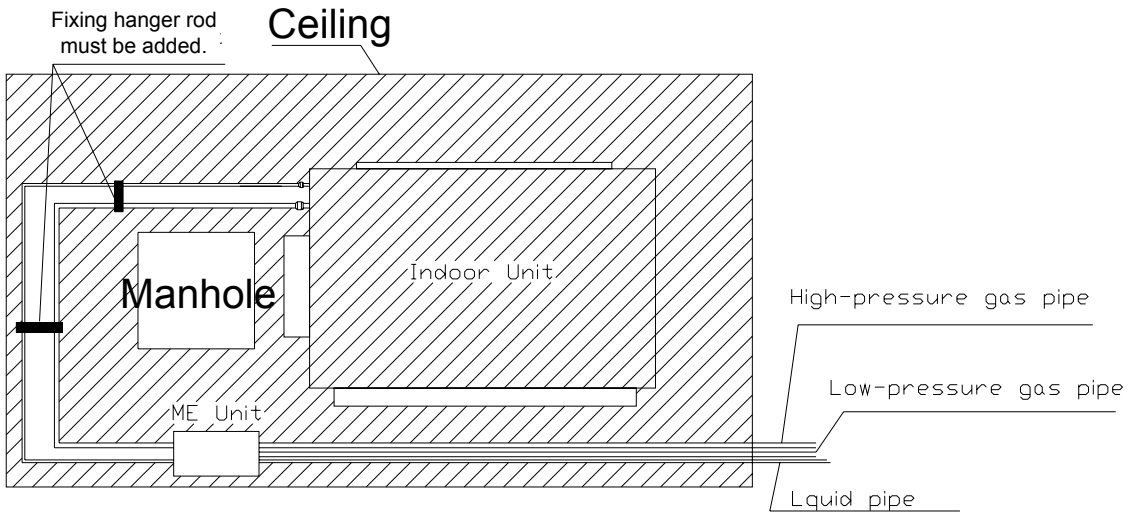
D. The component shall be installed in a straight line to the inlet pipe and branch pipe (See schematics below):



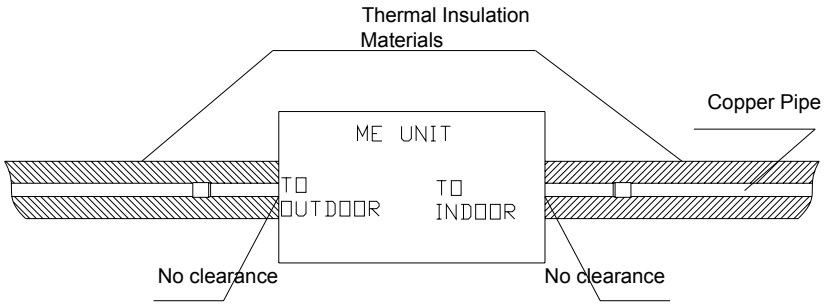
E. The diameter of the copper tube from mode exchanger to indoor unit is small. When the pipe from mode exchanger to indoor unit is longer than 1.5m, this pipe section, including the big pipe section, must be added with hanger rod.

See the schematics below:

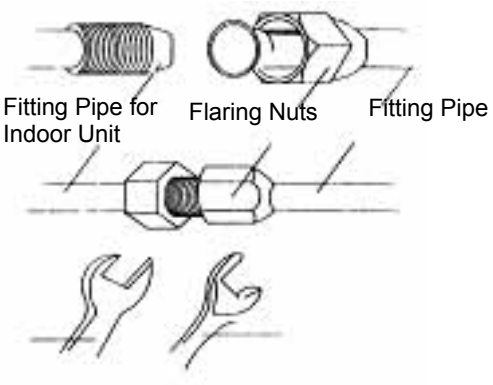
Connection of Indoor and Outdoor Unit



G. After completing the welding, use the strap to bundle the control wires along the pipeline.
H. After airtight test of the system, the mode exchanger must be thermally insulated. There shall be no copper tube exposed; otherwise, condensing and dripping might be caused.



● Connection of Outlet Pipe with Indoor & Outdoor Unit



☆ See the below for the torque required to tighten the nuts.
☆ Align the expansion end of copper pipe with the center of threaded joint. Tighten the flaring nuts with your hands.
☆ Tighten the flaring nuts with torque wrench until you hear a “click”.
☆ Bend of fitting pipe shall not be too low; or the fitting pipe might crack. Please use pipe bender when bending the fitting pipe.
☆ Use sponge to wrap the connecting pipe and joints without heat preservation. Tie with plastic tapes.

Connection of Indoor and Outdoor Unit

Torque Sheet for Tightening Nuts

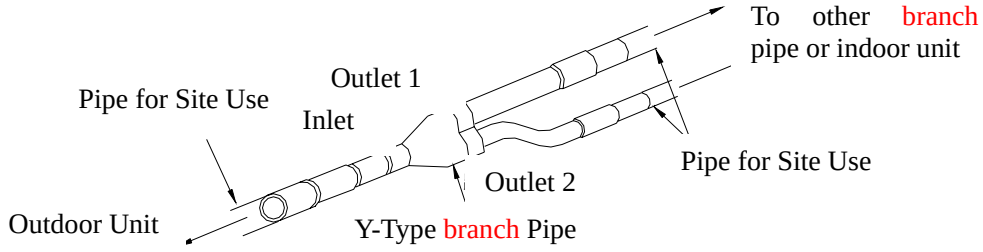
Pipe Diameter （mm）	Wall Thickness （mm）	Tightening Torque (N·m)
Ø6.35	≥0.5	15-30
Ø 9.52	≥0.71	30-40
Ø 12.7	≥1	45-50
Ø 15.9	≥1	60-65
Ø 19.05	≥1	70-75

⚠ Caution:

1. When connecting indoor unit and pipe, never pull the big and small joint of indoor unit with force, so as to prevent the capillary tube or other tubes of indoor unit from cracking and causing leakage.
2. Connecting pipe shall be supported by a rack without transmitting its weight to other units.

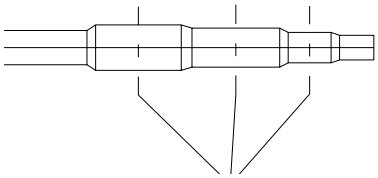
● Connection of Branch pipe

☆ Y-Type Branch pipe



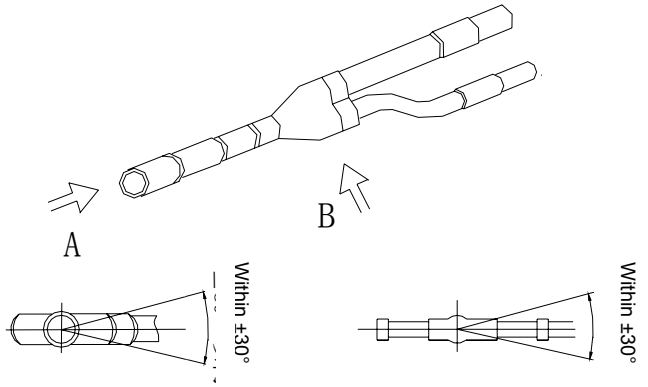
Connection of Indoor and Outdoor Unit

☆ Y-type branch pipe is equipped with auxiliary tubes to adjust the diameter of different pipes. If the dimension of the pipe selected for site use is different from the dimension of branch pipe joint, use the pipe cutter to cut from the middle of the pipe with different dimensions, and deburr it as well. Please see below.



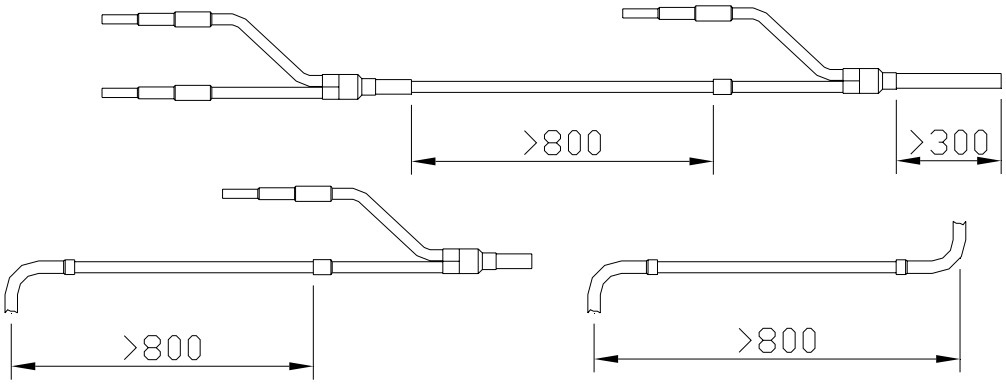
Cut from Middle

☆ Y-type branch pipe must be installed so that the manifold is in vertical or horizontal direction.



A View B View

☆ A straight pipe 300mm at least shall be provided on inlet side of branch pipe. Space between branch pipes must be kept at 800mm or more. Space between two bending points shall be kept at 800mm or more. Space between branch pipe and bending point shall also be kept at 800mm or more.



☆ On air pipe side, heat preservation materials which are able to endure 120℃ or a higher temperature shall be used for heat preservation of branch pipe. Do not use the foam on branch pipe as the material for heat preservation. To prevent liquid pipe from leaking, it is required to connect the two types of heat preservation materials end to end, i.e. the foam material on branch pipe and the heat preservation material used on site. After that, wrap up the joints between the two types of materials.

Connection of Indoor and Outdoor Unit

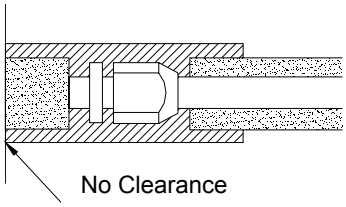
⚠ Caution:

● For multi-split air conditioner system, each pipe shall be pasted with label to identify the pipe for each system and avoid wrong connection.

● Installation of Protective Layer on Connection Pipe

1. To avoid condensate dew or water leakage on connecting pipe, the high pressure gas pipe, low pressure gas pipe and liquid pipe must be wrapped with heat preservation material and adhesive pipe for insulation from the air. High- pressure gas pipe should be covered with heat insulator which can endure at 120℃ or higher.

2. The joints on indoor unit and outdoor unit must be wrapped with heat preservation materials and have no clearance against the wall surface of indoor unit and outdoor unit.



⚠ Caution:

When the pipe is properly protected, do not bend it to a very small angle; otherwise the pipe might crack or broken.

3. Wrap the pipe with tapes.

☆ Use the adhesive tape to wrap the connecting pipe and cable into one bundle. To prevent condensate water from overflowing out of the drainpipe, the drainpipe shall be separated from connecting pipe and cable.

☆Wrap the heat preservation tape so that each ring of tape shall press half of the previous ring.

☆ Fix the wrapped pipe onto the wall with pipe clamp.

⚠ Caution:

☆ Do not wrap the protective tape too tightly, as this will decrease the heat insulation performance. Ensure that the drain hose of condensate water is separated.

☆ After completing the protection work and wrapping the pipe properly, close the wall holes with sealing materials.

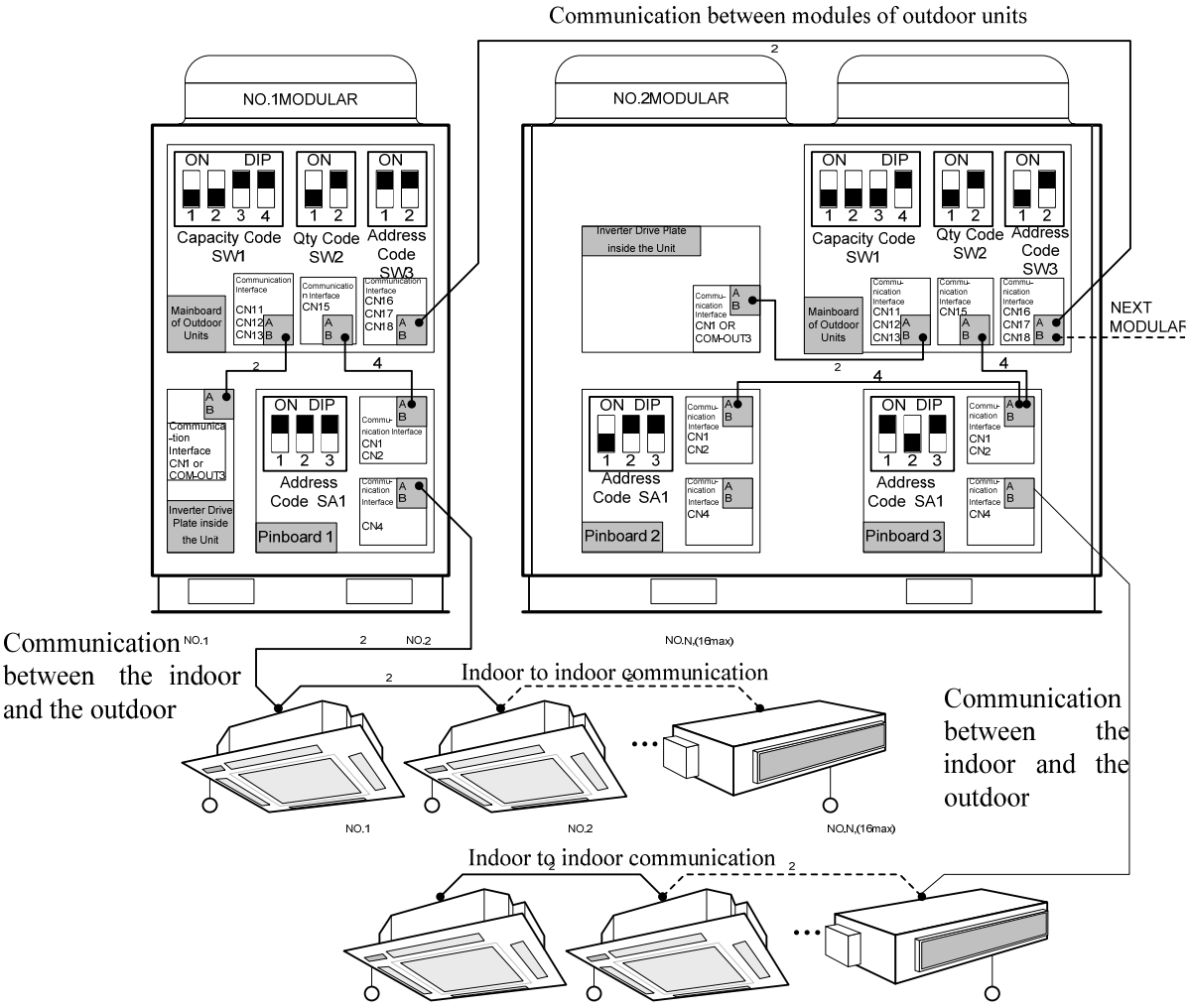
● Connection of Communication Line for Indoor Unit and Outdoor Unit

Open the electrical box of indoor unit and outdoor unit. Insert the distribution line (communication line) into electrical box via cable hole. Be sure to connect the indoor unit and outdoor unit in accordance with the wiring diagram labeled on the unit. (Refer to the electrical wiring of indoor unit and outdoor unit). The specification of power cable shall be selected in reference to the power capacity and installation environment of the unit. If no error, press wire clip respectively onto the cables tightly and then reinstall the electrical box cover. Magnetic rings shall be installed on two ends of the communication line.

Communication of the System

Ⅰ. Communication system of GREE Heat Recovery D.C Inverter Multi-VRF includes:

1. Communication between the indoor unit and the outdoor unit;
2. Communication among the indoor units
3. Communication among the outdoor units(in modules combination)
4. Communication among pinboards of outdoor units(when increasing pinboards is needed.)



Ⅱ.The communication way of GREE Heat Recovery D.C Inverter Multi-VRF includes:

1. All of the communication ways are 485 communication

2 Indoor units network: Dual-core twisted pair lines whose ends are three-pin XH plug are applied in the communication between outdoor units-indoor units/ indoor units-indoor units.

3. Outdoor units network: Dual-core twisted pair lines whose ends are four-pin XH plug applied in communication between module to module.

Ⅲ. Traits of communication for Heat Recovery D.C Inverter Multi-VRF

1. Communications among modules are by the mainboards connection inside modules

2. A communication pinboard is equipped in each module which can communicate with max, 16 indoor units simultaneously.

8×16＝128 台；Max. 8 pinboards can be equipped in each system and theoretically, max. quantity of indoor units can be: 8×16＝128 sets;

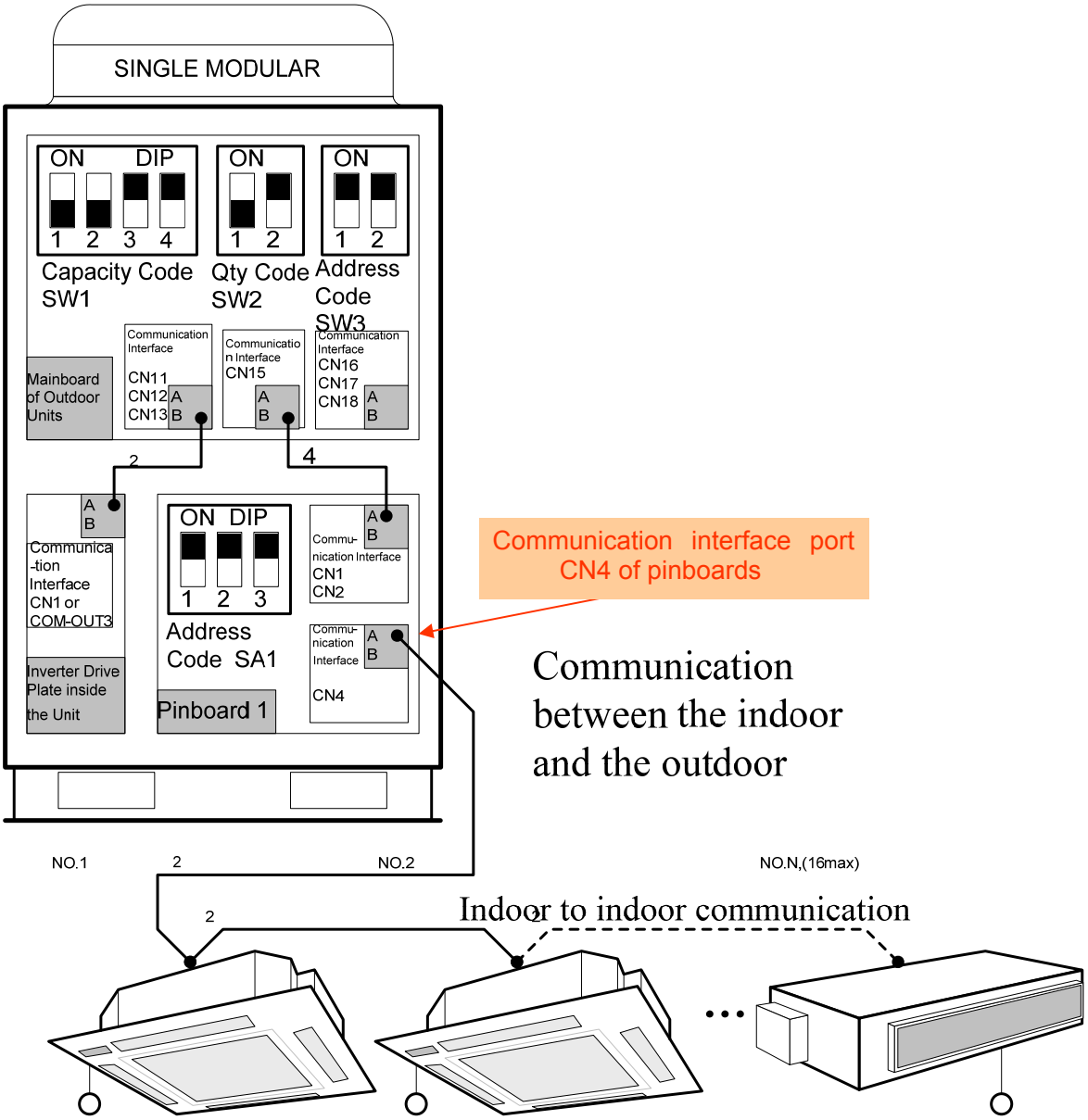
3. Extra pinboards are needed when indoor units of the system are more than that of pinboards connecting. Added pinboards can directly connect to previous pinboards.

Ⅳ Connection of communication lines

1. Connection for communication lines of indoor units and outdoor units

1.1 By directly connecting pinboards of outdoor units and mainboards of indoor units with communication lines, outdoor units and indoor units communicate with each other. Communication lines adopt two-pin twisted pair lines whose ends are three-pin XH plug The corresponding interface port of pinboards is CN4.

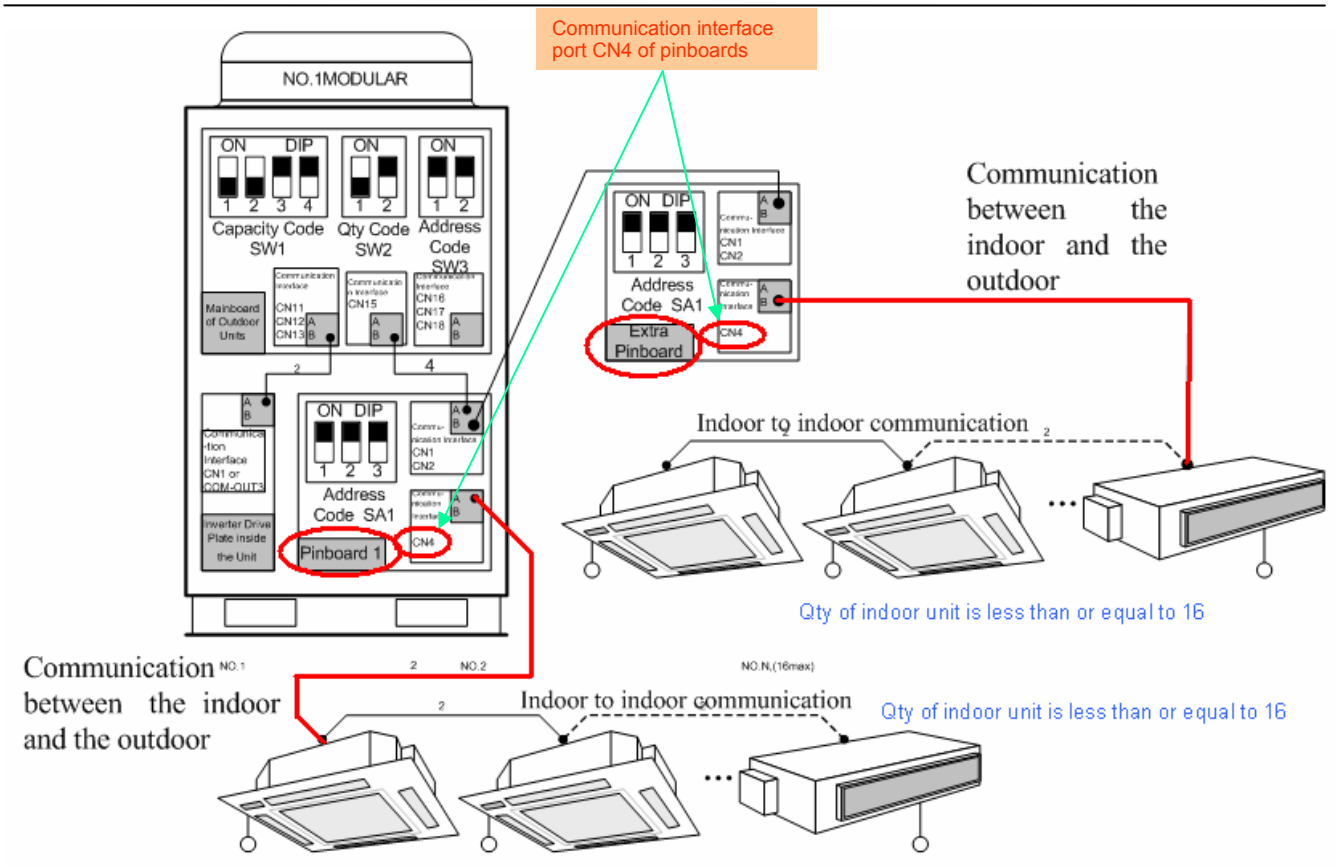
Communication of the System



1.2 When single module is applied in the outdoor unit and the Qty of indoor units are greater than 16sets and less than or equal to 32 sets:

When the Qty of indoor units are greater than 16sets and less than or equal to 32 sets, the indoor units that each pinboard connects cannot exceed 16sets and the corresponding interface port of pinboards is CN4.

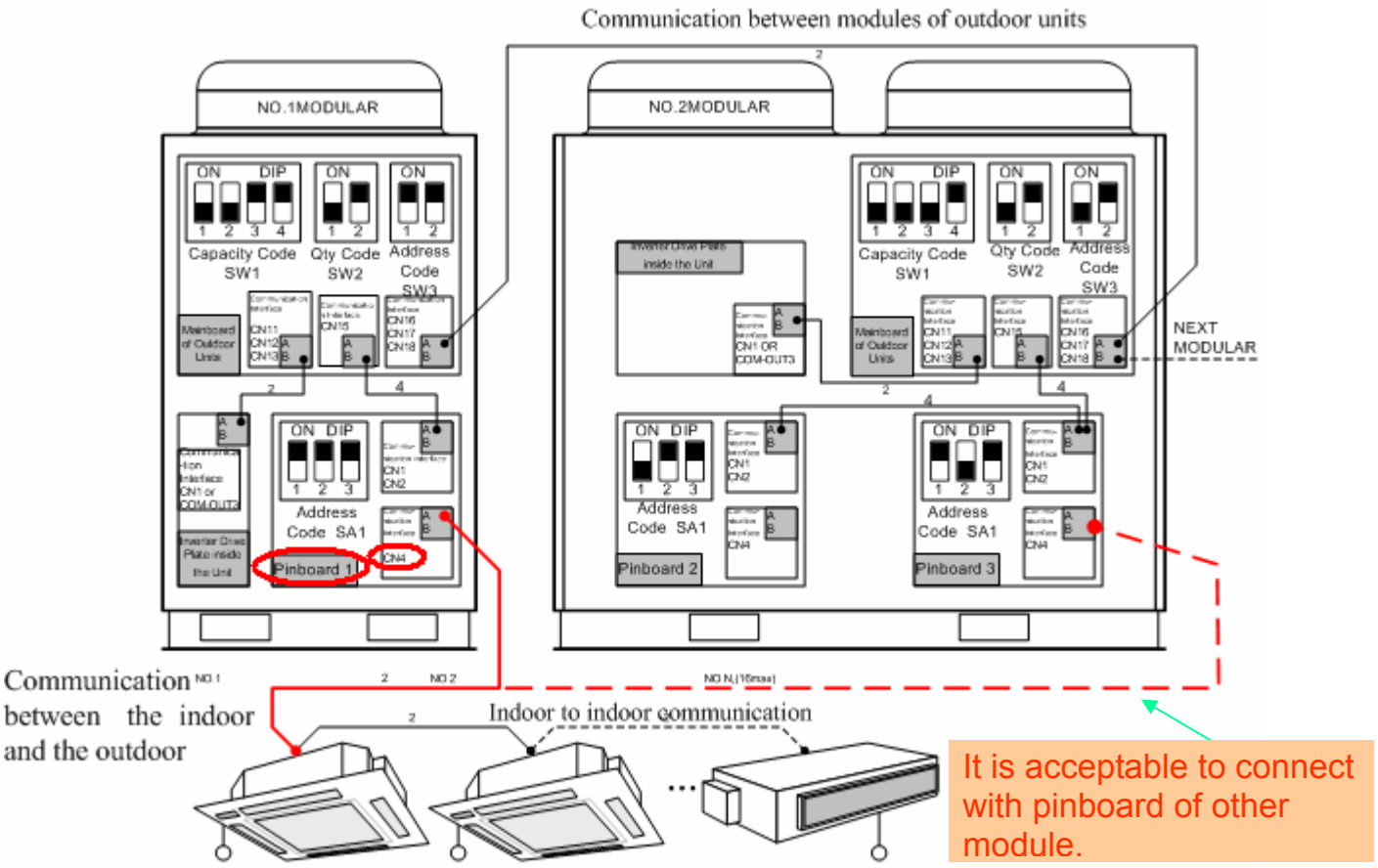
Communication of the System



1.3 When the qty of modules for outdoor units is two or above and the Qty of indoor units is less than or equal to 16sets.

One communication line connecting pinboard of one of outdoor modules is enough for communication of all indoor units,

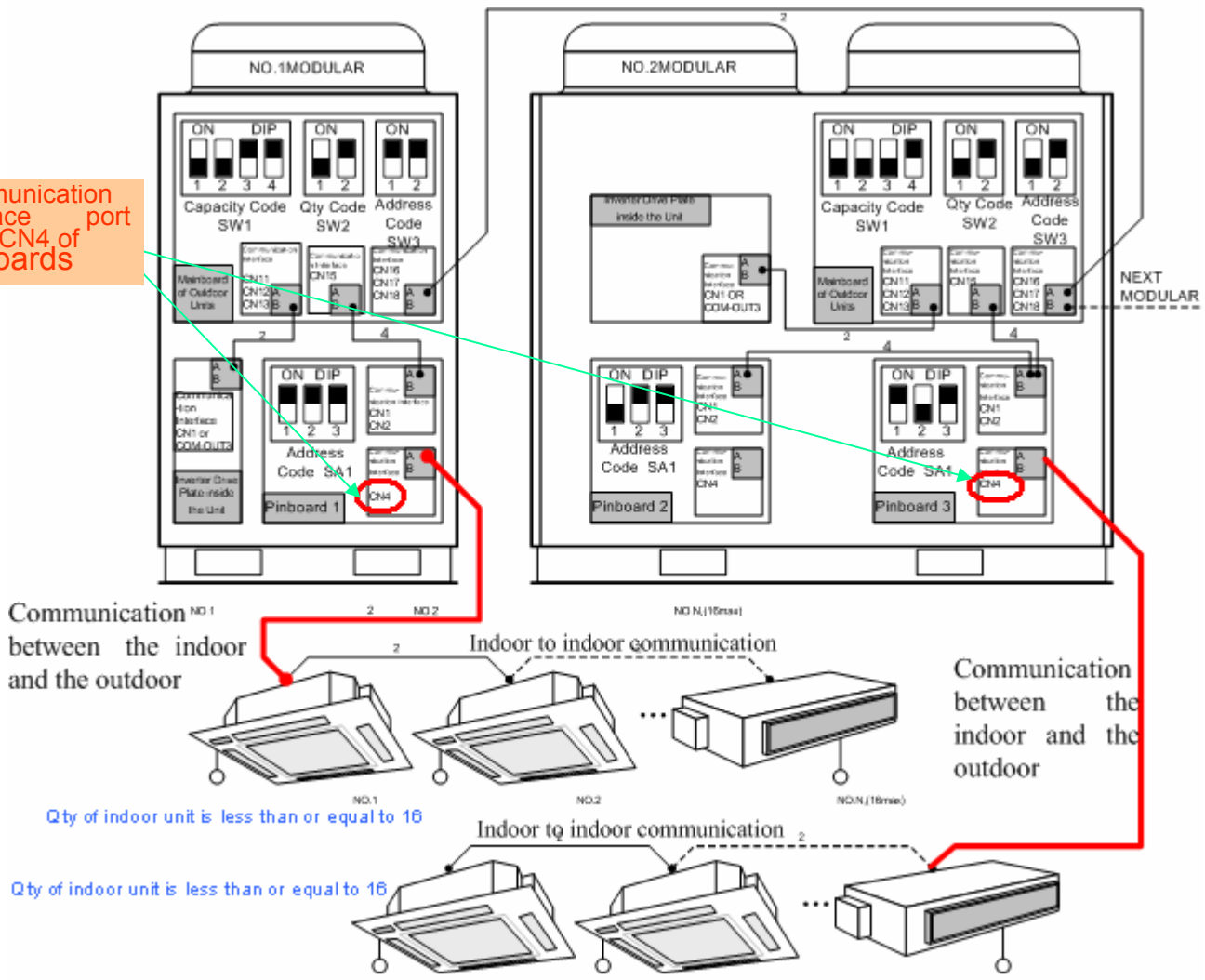
Communication of the System



1.4 2 modules or above are applied to outdoor units and the Qty of the indoor units is less than or equal to （N×16）:

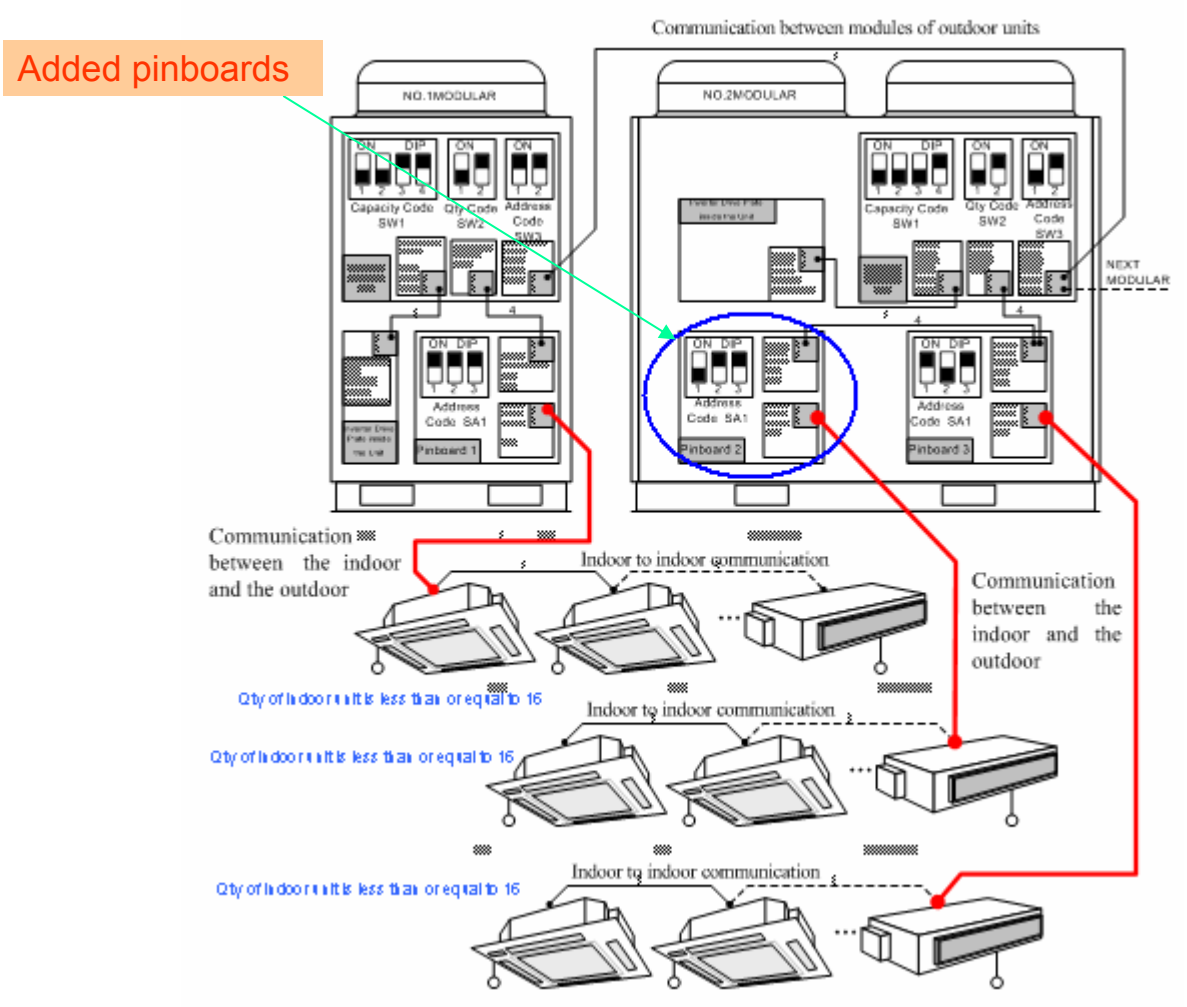
When the Qty of indoor units is less than or equal to （N×16）, there is no need for extra pinboards. The Qty of indoor units that each pinboards connects should less than or equal to 16 sets and the interface port of corresponding pinboard is CN4.

Communication of the System


Communication interface port CN4 of pinboards
NO.1MODULAR
NO.2MODULAR
NEXT MODULAR
Capacity Code SW1
Qty Code SW2
Address Code SW3
Address Code SA1
Pinboard 1
Pinboard 2
Pinboard 3
Communication between the indoor and the outdoor
Indoor to indoor communication
Qty of indoor unit is less than or equal to 16
Communication between the indoor and the outdoor
Indoor to indoor communication
Qty of indoor unit is less than or equal to 16

1.5 2 modules or above are applied to outdoor units and the Qty of the indoor units is greater than（N×16）: When the Qty of indoor units is greater than （N×16）， the extra pinboards should be added. The Qty of adding pinboards is :[total indoor units –(N×16）]/16. The Qty of indoor units that each pinboards connects should less than or equal to 16 sets and the interface port of corresponding pinboard is CN4.

Communication of the System

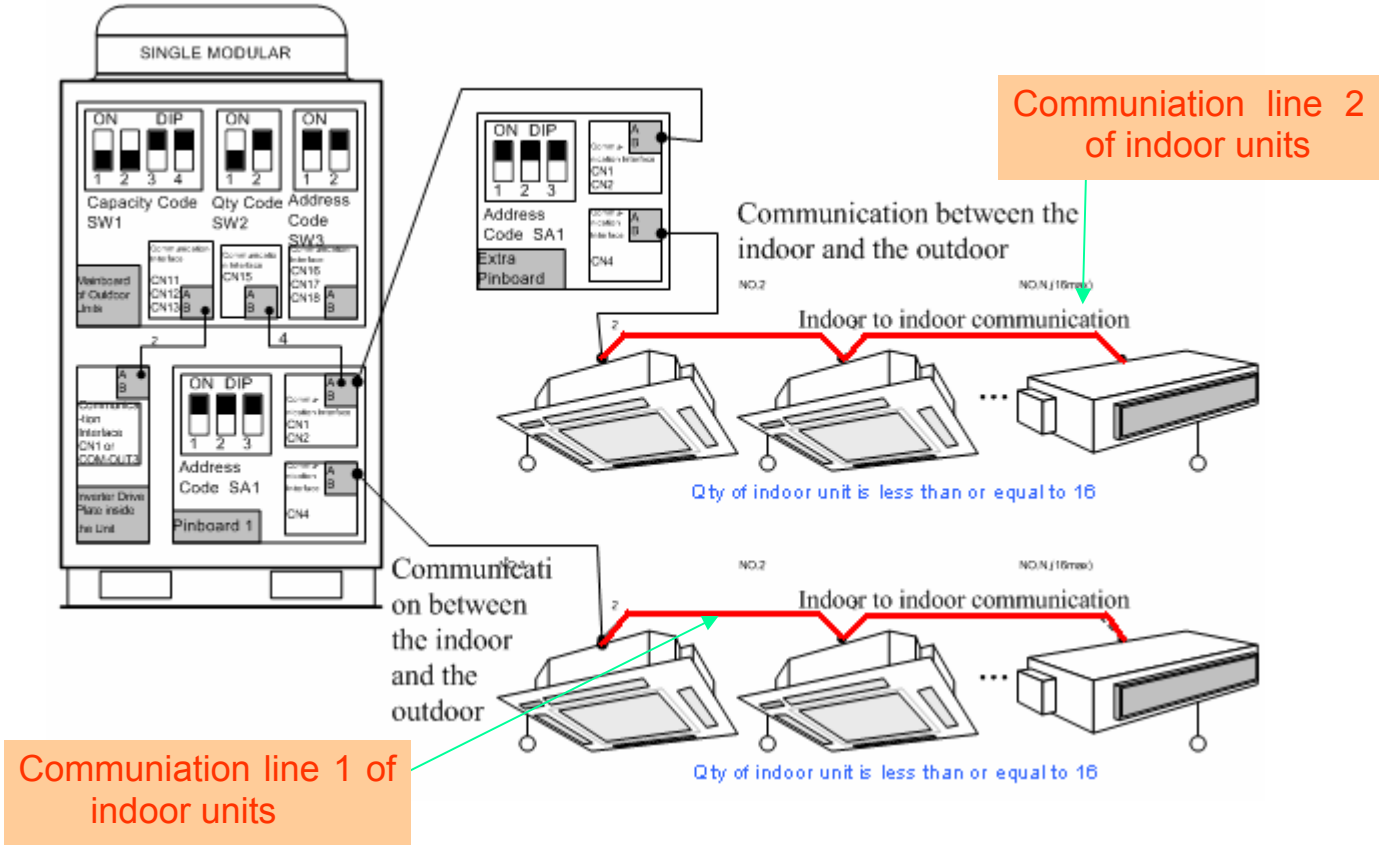

Added pinboards
Communication between modules of outdoor units
NO.1MODULAR
NO.2MODULAR
Capacity Code SW1
Qty Code SW2
Address Code SW3
Address Code SA1
Pinboard 1
Pinboard 2
Pinboard 3
NEXT MODULAR
Communication between the indoor and the outdoor
Indoor to indoor communication
Qty of indoor units is less than or equal to 16
Communication between the indoor and the outdoor
Indoor to indoor communication
Qty of indoor units is less than or equal to 16
Indoor to indoor communication
Qty of indoor units is less than or equal to 16

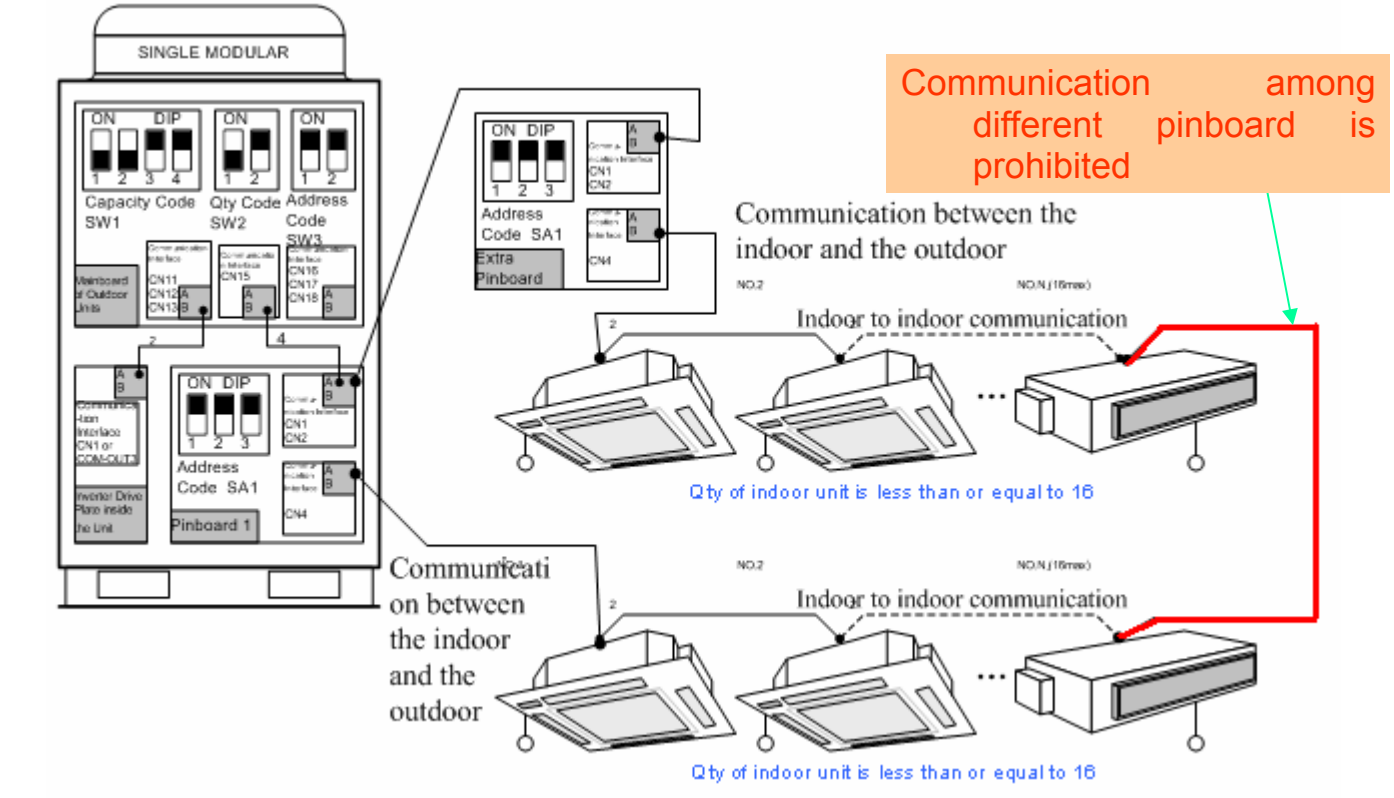
For example: there are total 2 modules in outdoor units and each module equips one pinboard which can connect max, 16 indoor units So there are 32 sets indoor units can be connected. But the actual Qty of indoor units is 45 sets in this project, so one pinboard should be added:(45-32）/16＝0.81

2. Connection of communication lines between indoor and outdoor units.

Communication between indoor units and outdoor units is restrained in network of the same pinboard which can connect 16 sets of indoor units at the most.

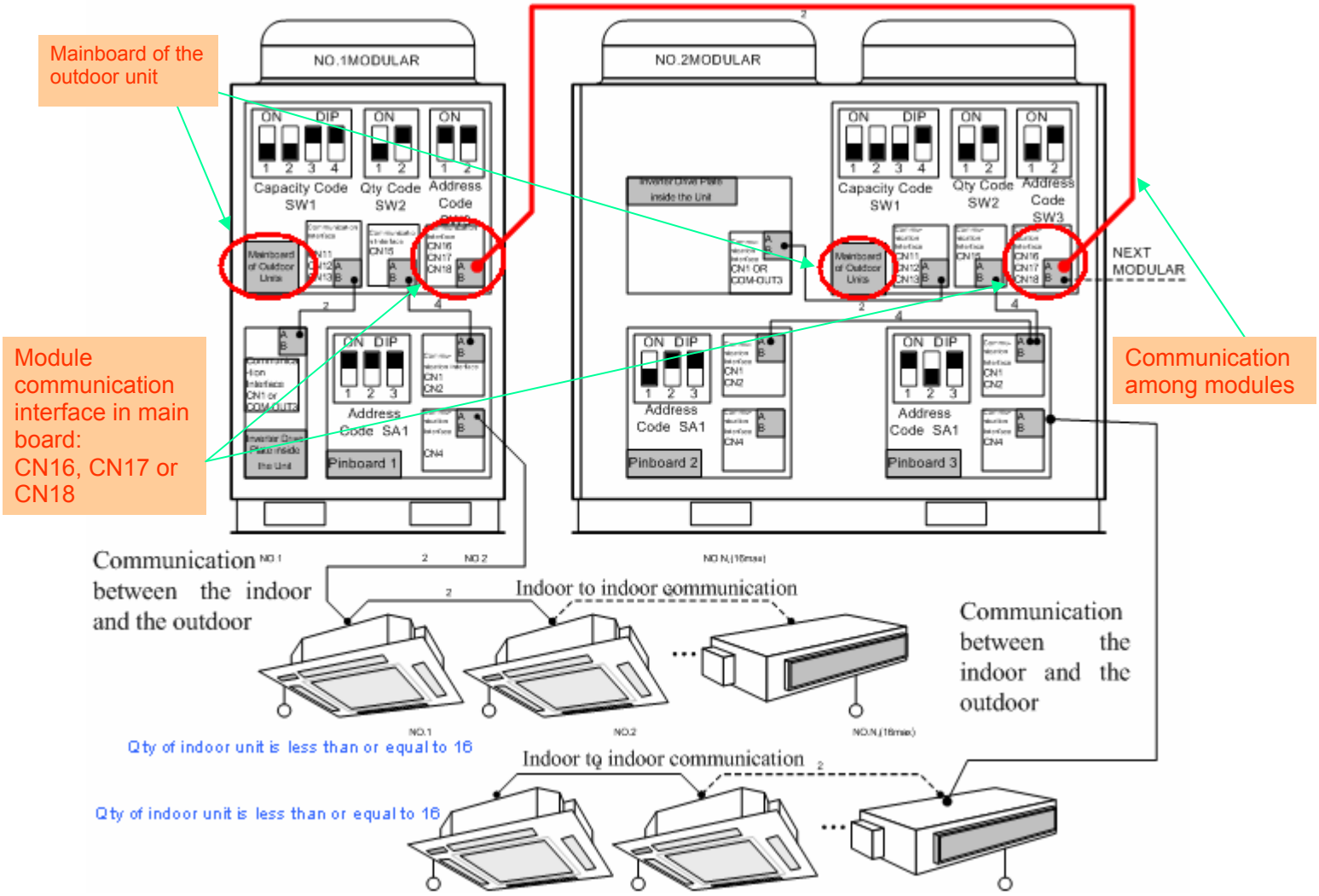
Communication of the System


SINGLE MODULAR
Capacity Code SW1
Qty Code SW2
Address Code SW3
Address Code SA1
Extra Pinboard
Pinboard 1
Communication between the indoor and the outdoor
Indoor to indoor communication
Qty of indoor unit is less than or equal to 16
Communiation line 2 of indoor units
Communiation line 1 of indoor units


SINGLE MODULAR
Capacity Code SW1
Qty Code SW2
Address Code SW3
Address Code SA1
Extra Pinboard
Pinboard 1
Communication between the indoor and the outdoor
Indoor to indoor communication
Qty of indoor unit is less than or equal to 16
Communication among different pinboard is prohibited

3. Connection of communication lines of outdoor modules.

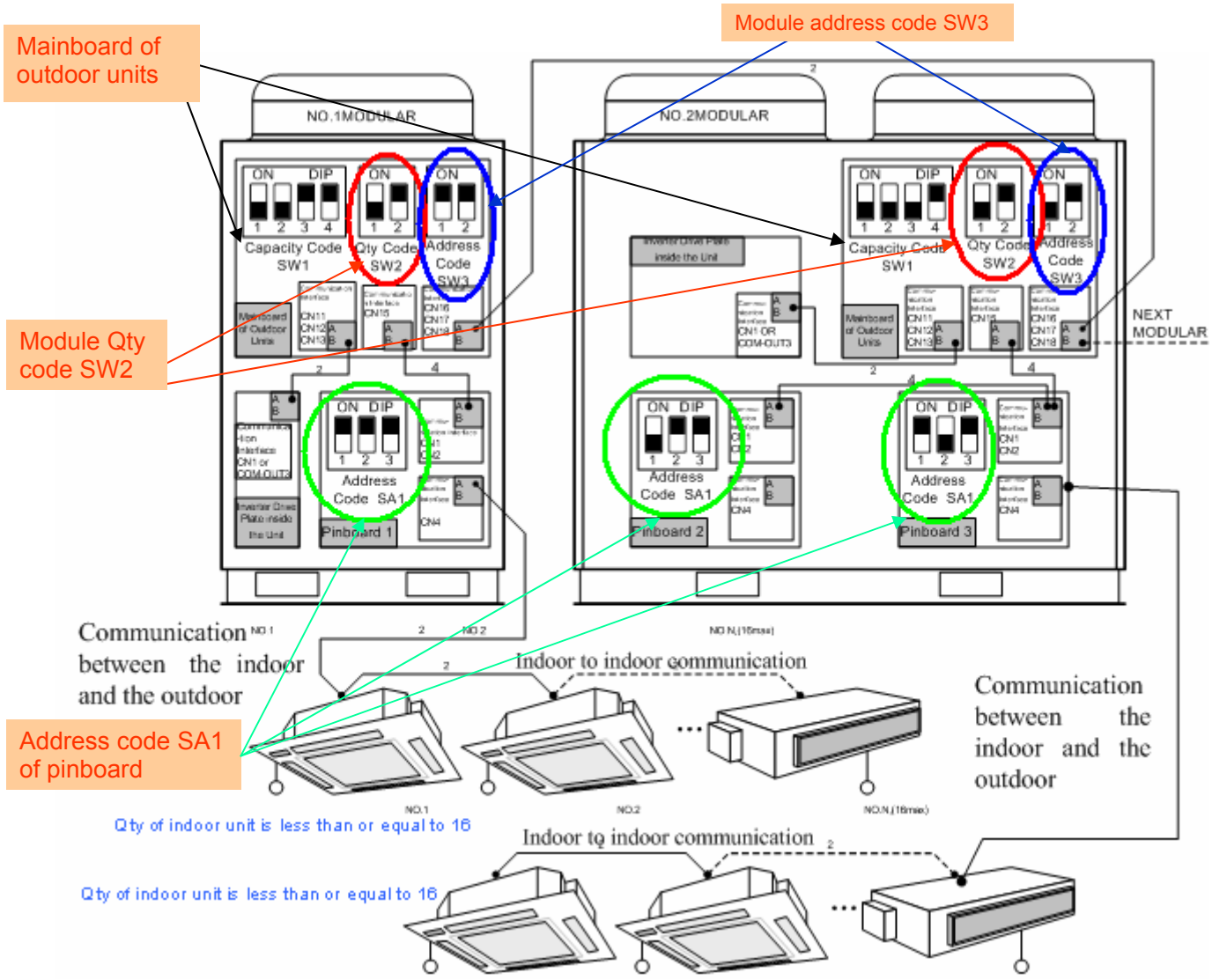
By directly connecting mainboard with the dual-core and four-port communication line, communication of outdoor modules can be realized. Communication interface in mainboard is CN16.


Mainboard of the outdoor unit
Module communication interface in main board: CN16, CN17 or CN18
Communication among modules
NO.1MODULAR
NO.2MODULAR
Capacity Code SW1
Qty Code SW2
Address Code SW3
Address Code SA1
Pinboard 1
Pinboard 2
Pinboard 3
NEXT MODULAR
Communication between the indoor and the outdoor
Indoor to indoor communication
Communication between the indoor and the outdoor
Qty of indoor unit is less than or equal to 16
Indoor to indoor communication
Qty of indoor unit is less than or equal to 16

Ⅵ.Communication Address Setting

Communication address setting includes: address setting of indoor units, address setting of wired controller, communication address setting of outdoor units, the module Qty setting of outdoor units and communication address setting of pinboard.

Communication of the System


Mainboard of outdoor units
Module address code SW3
Module Qty code SW2
Address code SA1 of pinboard
NO.1MODULAR
NO.2MODULAR
ON DIP
Capacity Code SW1
Qty Code SW2
Address Code SW3
Address Code SA1
Pinboard 1
Pinboard 2
Pinboard 3
NEXT MODULAR
Communication between the indoor and the outdoor
Indoor to indoor communication
Communication between the indoor and the outdoor
Qty of indoor unit is less than or equal to 16
Indoor to indoor communication
Qty of indoor unit is less than or equal to 16

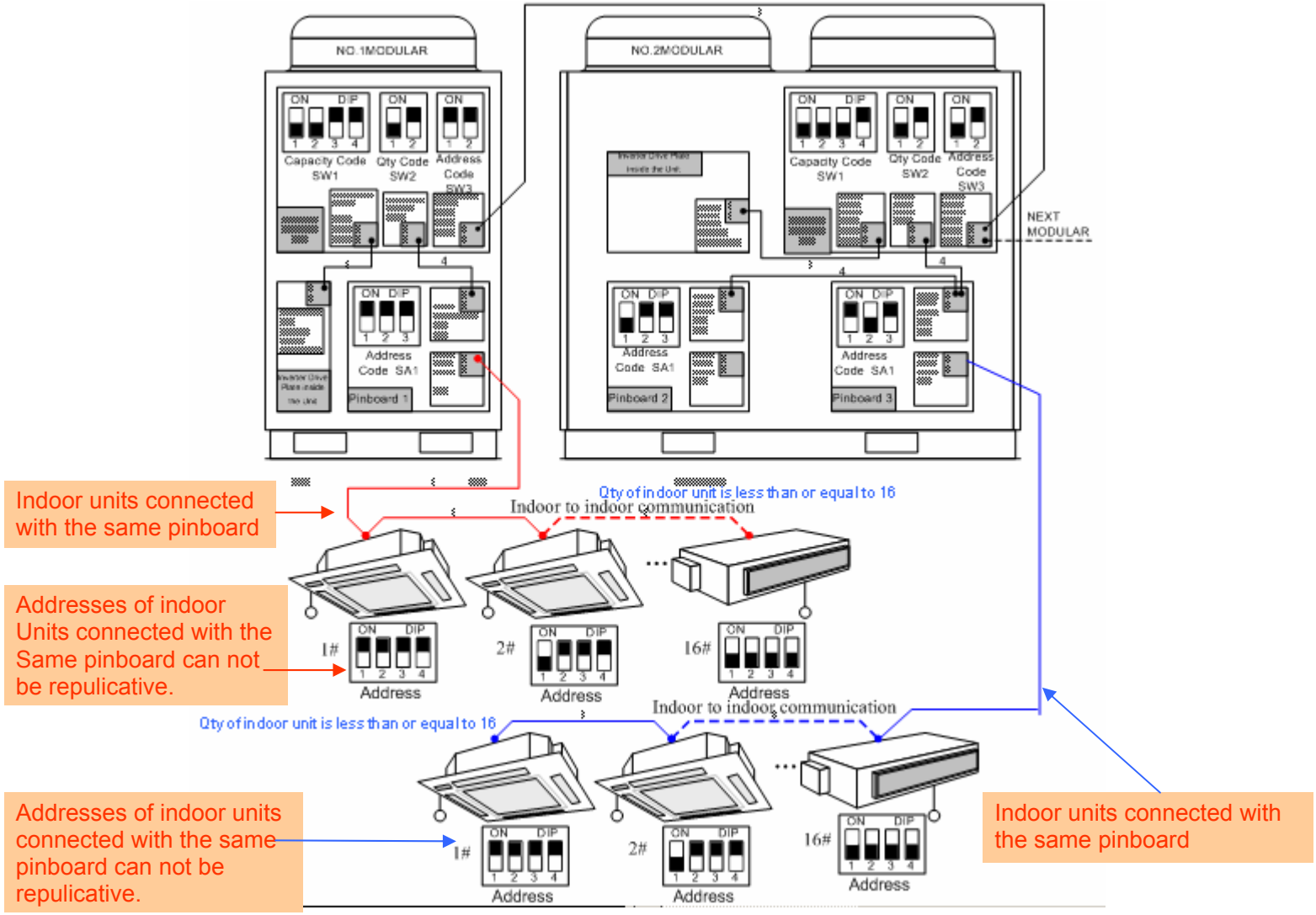
1. Address setting of indoor untis

Cautions as setting address of indoor units

1）. Indoor units connected with a same pinboard whose address can be set as 1~16 # but addresses cannot be reduplicative.

2）. Addresses of indoor units connected with different pinboard can be the same.

Communication of the System


NO.1MODULAR
NO.2MODULAR
Capacity Code SW1
Qty Code SW2
Address Code SW3
NEXT MODULAR
Address Code SA1
Pinboard 1
Pinboard 2
Pinboard 3
Indoor units connected with the same pinboard
Qty of indoor unit is less than or equal to 16
Indoor to indoor communication
Addresses of indoor Units connected with the Same pinboard can not be repulicative.
1#
2#
16#
Address
Qty of indoor unit is less than or equal to 16
Indoor to indoor communication
Addresses of indoor units connected with the same pinboard can not be repulicative.
Indoor units connected with the same pinboard

The mainboard of the wire controller has a 4-bit DIP controller to allocate the address of the controller. The address of the wire controller must be identical with the address of the corresponding indoor unit.

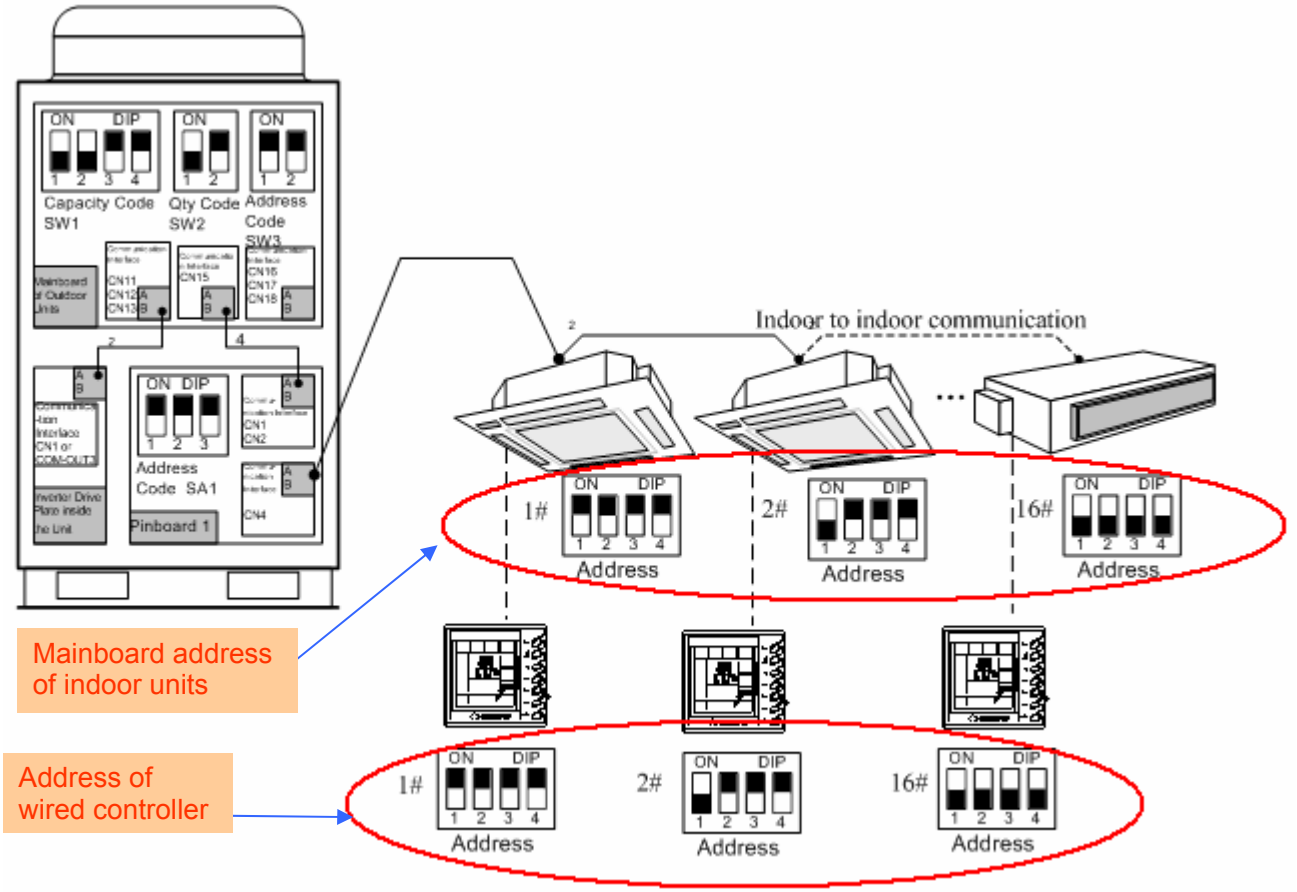
Address setting of indoor unit and wire controller are shown in the following table:

Bits 1~4 for Address Setting									
Corresponding Pins of the 8-Bit (4-Bit) DIP Switch									
4	3	2	1	Allocated Address	4	3	2	1	Allocated Address
0	0	0	0	1	1	0	0	0	9
0	0	0	1	2	1	0	0	1	10
0	0	1	0	3	1	0	1	0	11
0	0	1	1	4	1	0	1	1	12
0	1	0	0	5	1	1	0	0	13
0	1	0	1	6	1	1	0	1	14
0	1	1	0	7	1	1	1	0	15
0	1	1	1	8	1	1	1	1	16
Note: The position “ON” means “0”.									

2. Address Setting of Wired Controller

Caution:

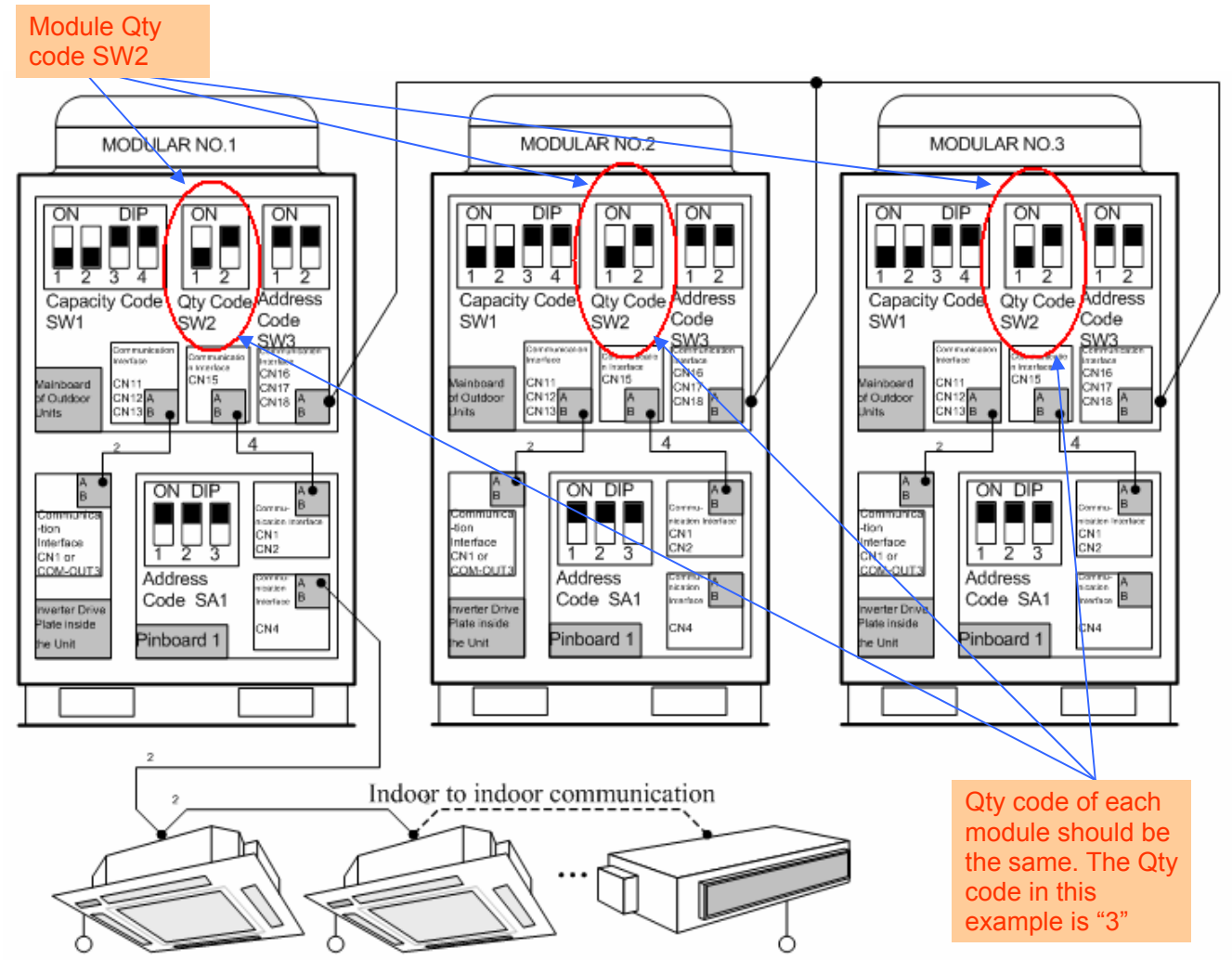
When setting the communication address of wired controller, the address has to be the same as the mainboard address of connecting indoor units, or communication error code “E6” will be displayed.



3. Module Qty Setting of Outdoor Units

When there is module combination system in outdoor units, each module in the same cooling system has to set the Qty of module combination and the setting Qty must be the same or communication error code” E6” will be displayed. The module Qty setting of the system is in the mainboard of each module and the Qty code is SW2.

Communication of the System



4. Qty code of each module should be the same. The Qty code in this example is “3”

Communication of the System

When there is module combination system in outdoor units, each module in the same cooling system has to set the module address code which cannot be reduplicative or communication error code" E6" will be displayed. The setting sequence of module address has to be as the follows:

If the total modules in the same cooling system is 4, module sequence must be: 1＃， 2＃， 3＃， 4＃；

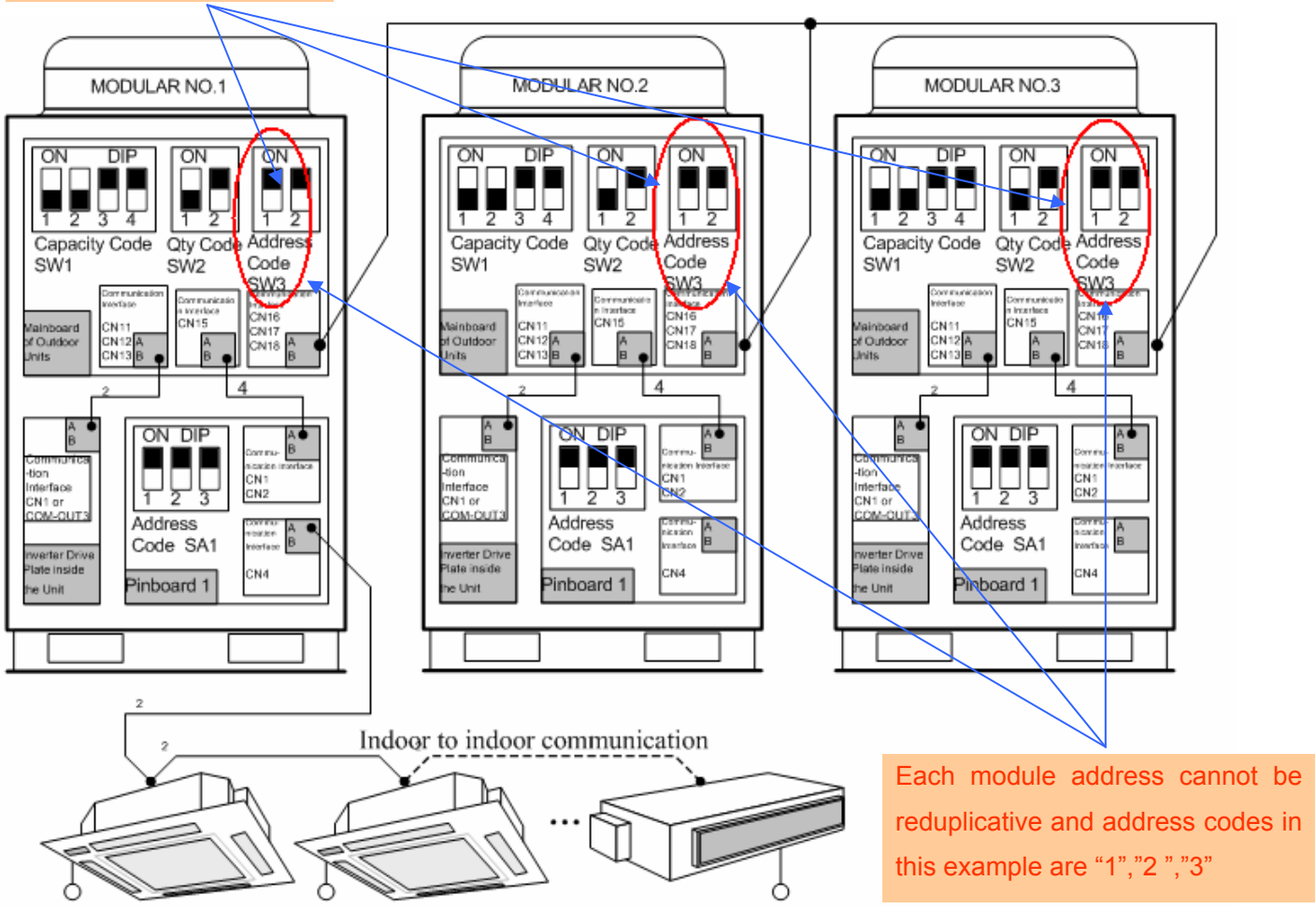
If the total modules in the same cooling system is 3, module sequence must be: 1＃， 2＃， 3＃；

If the total modules in the same cooling system is 2, module sequence must be: 1＃， 2＃；

If the total modules in the same cooling system is 1, module sequence must be: 1＃；

Module address code is in "SW3" of mainboard.

Each module address code is in "SW3" of mainboard.

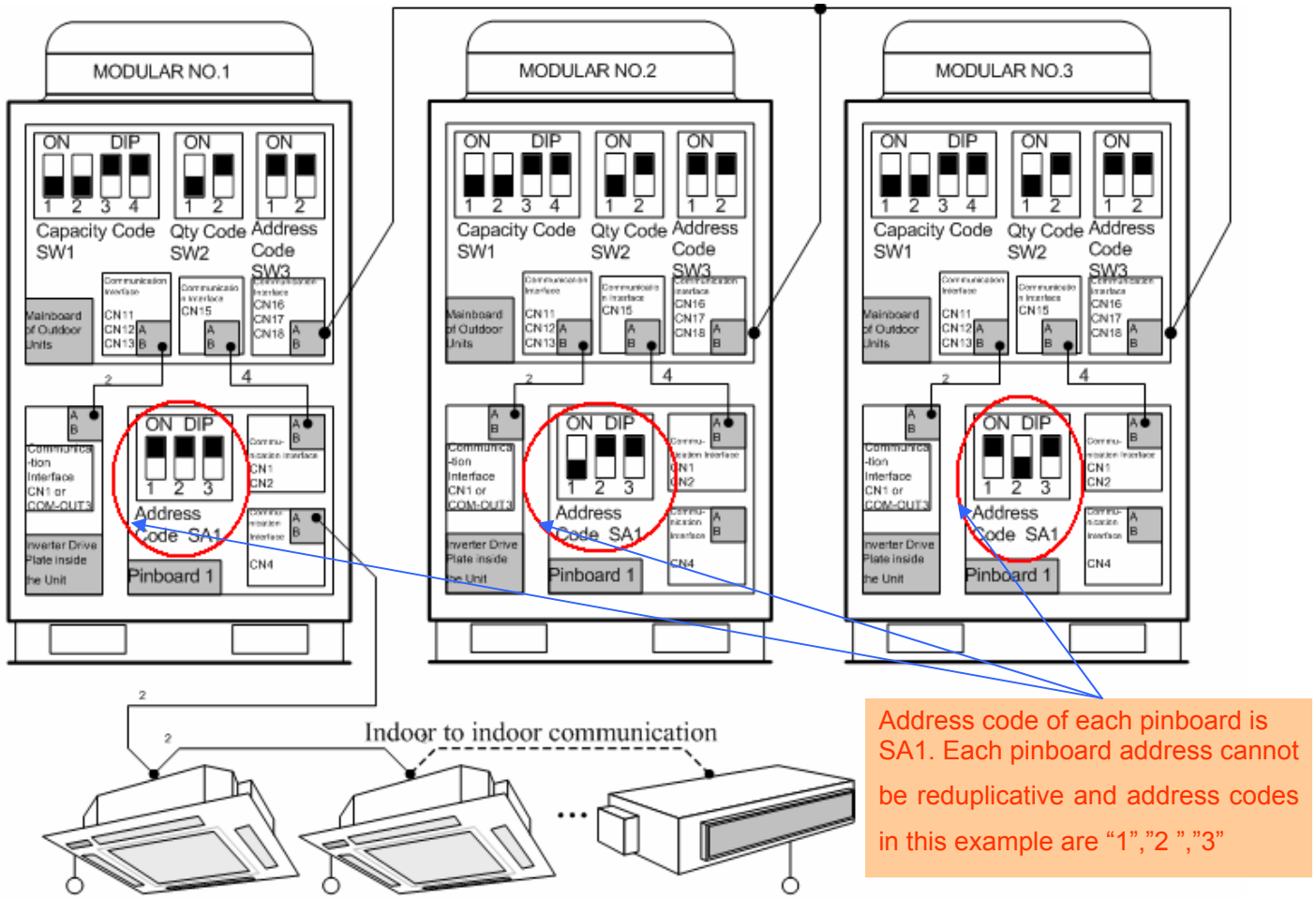


Each module address cannot be reduplicative and address codes in this example are "1","2 ","3"

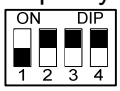
6. Communication address setting of pinboard

When there is module combination system in outdoor units, each pinboard in the same cooling system has to set the address code which cannot be reduplicative or communication error code" E6" will be displayed. Address code of pinboard is SA1, and address setting range is 1#~8#.

Communication of the System



Ⅶ. Code Table

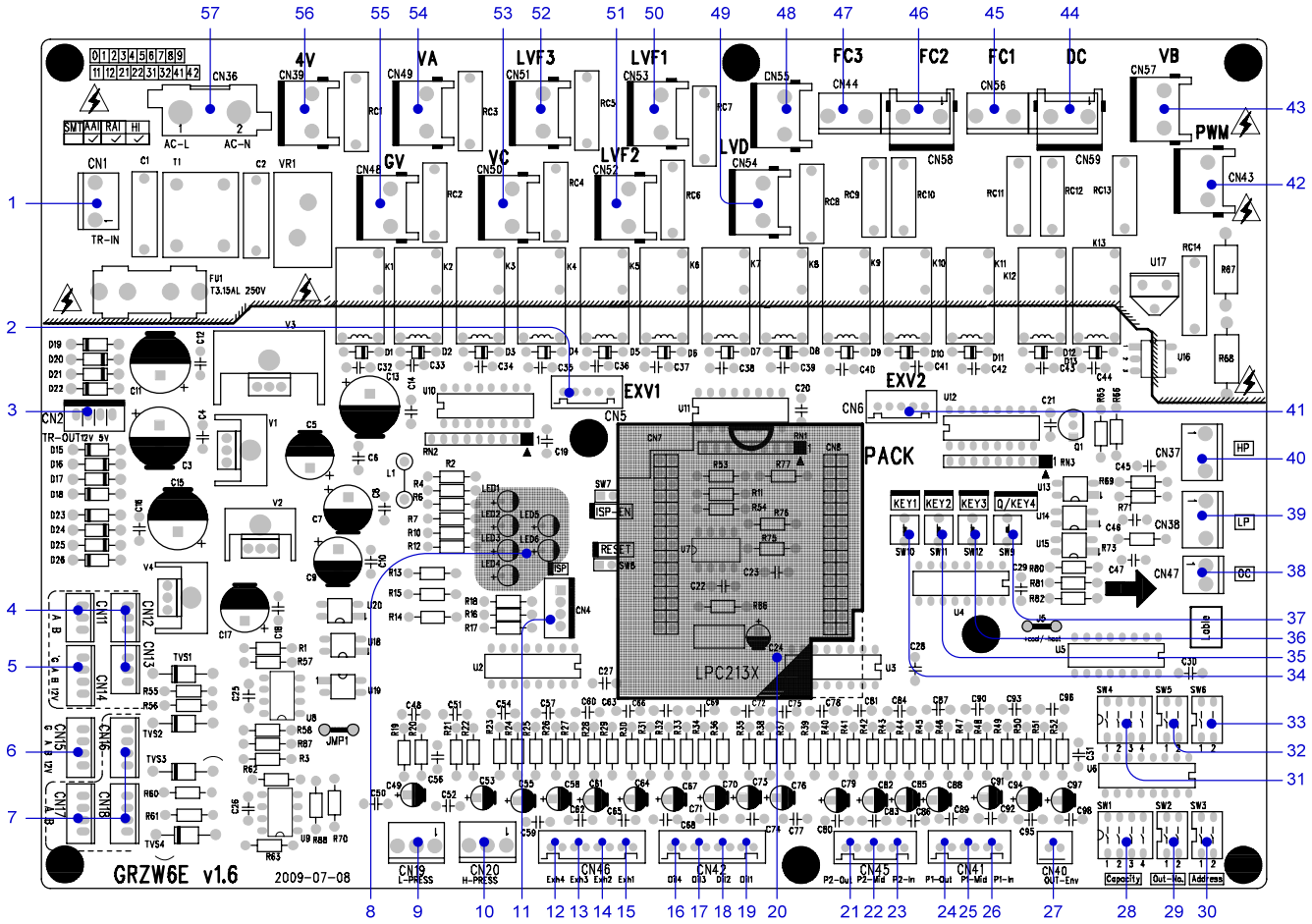
<table>
<tr><th>Model of Control Device</th><th>Code Tyoe</th><th>Silk Screen of Code</th><th colspan="5">Dialing Method</th><th>Note</th></tr>
<tr><td rowspan="15">Mainboard of Outdoor Units</td><td rowspan="8">module capacity
  </td><td rowspan="8">SW1 (Capacity)</td><td colspan="4">Code Position</td><td>Capacity</td><td rowspan="8">.Gluing already
Code is set in factory according to model of the unit and the correction is needless. If the code which is not in this table is set, there might be an error in the unit.</td></tr>
<tr><td>4</td><td>3</td><td>2</td><td>1</td><td></td></tr>
<tr><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>22.4KW</td></tr>
<tr><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>28.0KW</td></tr>
<tr><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>33.5KW</td></tr>
<tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>40.0KW</td></tr>
<tr><td>OFF</td><td>ON</td><td>ON</td><td>ON</td><td>45.0KW</td></tr>
<tr><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>50.4KW</td></tr>
<tr><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>55.0KW</td></tr>
<tr><td rowspan="6">module Qty
 </td><td rowspan="6">SW2 (Out-No.)</td><td colspan="4">Code Position</td><td>Qty</td><td rowspan="6">This code is valid when the module address of mainboard is “0” and it should be the same as the module Qty which is connected with the complete unit. The code is set when on site installation.</td></tr>
<tr><td>/</td><td>/</td><td>2</td><td>1</td><td></td></tr>
<tr><td>-</td><td>-</td><td>ON</td><td>ON</td><td>1</td></tr>
<tr><td>-</td><td>-</td><td>ON</td><td>OFF</td><td>2</td></tr>
<tr><td>-</td><td>-</td><td>OFF</td><td>ON</td><td>3</td></tr>
<tr><td>-</td><td>-</td><td>OFF</td><td>OFF</td><td>4</td></tr>
<tr><td rowspan="6">module address
 </td><td rowspan="6">SW3 (Address)</td><td colspan="4">Code Position</td><td>Address</td><td rowspan="6">The code shall be increased from “0” and the max address code cannot exceed the module Qty code. There is no need for gluing and the code is set when on site installation.</td></tr>
<tr><td>/</td><td>/</td><td>2</td><td>1</td><td></td></tr>
<tr><td>-</td><td>-</td><td>ON</td><td>ON</td><td>1# units</td></tr>
<tr><td>-</td><td>-</td><td>ON</td><td>OFF</td><td>2# units</td></tr>
<tr><td>-</td><td>-</td><td>OFF</td><td>ON</td><td>3# units</td></tr>
<tr><td>-</td><td>-</td><td>OFF</td><td>OFF</td><td>4# units</td></tr>
<tr><td rowspan="7">Pinboard</td><td rowspan="7">pinboard address
 </td><td rowspan="7">SA1</td><td colspan="4">Code Position</td><td>Address</td><td rowspan="7">The address code of each pinboard in the complete unit cannot be reduplicative and there is no requirement for sequence. The code is set when on site installation.</td></tr>
<tr><td>/</td><td>3</td><td>2</td><td>1</td><td></td></tr>
<tr><td>-</td><td>ON</td><td>ON</td><td>ON</td><td>1</td></tr>
<tr><td>-</td><td>ON</td><td>ON</td><td>OFF</td><td>2</td></tr>
<tr><td>-</td><td>ON</td><td>OFF</td><td>ON</td><td>3</td></tr>
<tr><td>-</td><td>ON</td><td>OFF</td><td>OFF</td><td>4</td></tr>
<tr><td>-</td><td>OFF</td><td>ON</td><td>ON</td><td>5</td></tr>
</table>

<table>
<tr><td rowspan="3"></td><td rowspan="3"></td><td rowspan="3"></td><td>-</td><td>OFF</td><td>ON</td><td>OFF</td><td>6</td><td rowspan="3"></td></tr>
<tr><td>-</td><td>OFF</td><td>OFF</td><td>ON</td><td>7</td></tr>
<tr><td>-</td><td>OFF</td><td>OFF</td><td>OFF</td><td>8</td></tr>
<tr><td rowspan="6">Fan Board</td><td rowspan="6">fan address

</td><td rowspan="6">S2
or
S1</td><td colspan="4">Code Position</td><td>Address</td><td rowspan="6">The code shall be increased from “0” and there is no requirement for sequence and each module is independent. The code is set in factory and there is no need for correction.</td></tr>
<tr><td>/</td><td>/</td><td>2</td><td>1</td><td></td></tr>
<tr><td>-</td><td>-</td><td>ON</td><td>ON</td><td>1</td></tr>
<tr><td>-</td><td>-</td><td>ON</td><td>OFF</td><td>2</td></tr>
<tr><td>-</td><td>-</td><td>OFF</td><td>ON</td><td>3</td></tr>
<tr><td>-</td><td>-</td><td>OFF</td><td>OFF</td><td>4</td></tr>
</table>

Communication of the System

Ⅷ.Definition Table for Interface Ports of the Mainboard



1. transformer input	2. A electric expansion valve A	3. transformer output	4.communication interface of drive plate	5.Not Used
6.communication interface of pinboards	7.communication interfaces of other modules	8. Status LED	9. Low pressure sensor	10. high pressure sensor
11.Not Used	12.Not Used	13. Discharge temp. sensor of fixed speed 2	14. Discharge temp. sensor of fixed speed 1	15. discharge temp. sensor of the inverter

16.Not Used	17. temp. sensor on the top of the shell for fixed speed 2	18. temp. sensor on the top of the shell for fixed speed 1	19. temp. sensor on the top of the shell for the inverter	20. Mainboard
21. temp sensor of outlet pipe B	22.Not Used	23. temp sensor of inlet pipe B	24. temp sensor of outlet pipe A	25. Not Used
26. temp sensor of inlet pipe A	27.temp. sensor in outer ring	28. module capacity code	29. module Qty code	30. module address code
31.Not Used	32. Not Used	33. Not Used	34. button 1	35. button 2
36. button 3	37. quick test vent	38.overcurrent protection switch	39.Not Used	40. high pressure protection switch
41. electric expansion valve B	42. oil-equalized valve 2	43. oil return valve2	44. fixed-.rate compressor 2	45. fixed-rate compressor 1
46. inverter electric heating tape	47.Not Used	48. electromagnetic valve D	49. Liquid by-pass	50. oil return valve 1
51. oil-equalized valve 1	52. B 4-way valve B	53. electromagnetic valve C	54. electromagnetic valve A	55. gas by-pass

56. 4-way valve A	57. power input of mainboard			

Notice for Project Installation

●Pressure Maintaining and Leak Detection

Pressure maintaining and leak detection is required during installation of connecting pipe. After connection of connecting pipe with indoor/outdoor unit, it should be performed once again.

Operation Procedure:

（1）Charge 3.8Mpa of nitrogen and maintain the pressure for 24 hours.
（2）Observe if the pressure change in 24 hours.
（3）If there is leakage, check screw joints of indoor/outdoor unit and each spot weld.
（4）Recover or repair the leak source and maintain pressure again until it is qualified.

●Selection of Piping at Site and Heat Preservation

Wall thickness and thickness of heat insulator should conform to requirements in following table to ensure safe project and prevent condensate attaching to heat-insulating pipe dropping.

Connecting Pipe （mm）(External diameter)	Thickness of heat insulator （mm）
Φ6.35	≥10
Φ9.52	≥10
Φ12.7	≥15
Φ15.9	≥15
Φ19.05	≥15
≥Φ22.2	≥20

●Notice

- Only R410A can be used.
  The pressure of R410A is about 1.6 times higher than that of R22.
- Make sure that refrigerants are charged in liquid condition.
- All indoor units must be with exclusive models, and please refer to Selection Manual for applicable models.
- All equipments should be modified to R410 special equipment to avoid damage of ozonosphere and green house effect.
- Before installation or maintenance, get ready for special tools in following table.

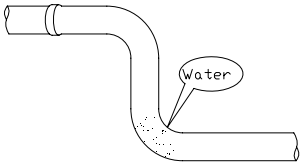
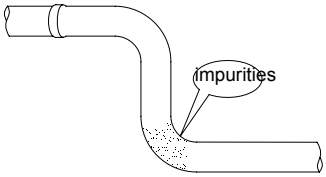
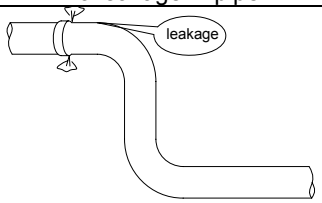
	R410A special tool
a	Manometer connecting pipe
b	Filling hose
c	Electronic scale for refrigerant charging
d	Torque spanner
e	Flaring tool
f	Vacuum pump
g	Leakagemeter

Notice for Project Installation

● Pipe Installation

Pipe installation of refrigerants is very important. Keep inner pipe dry, clean and sealed.

Three important points for pipe installation of refrigerants

	Dry	Clean	Sealed
	No water in pipe	No impurities in pipe	No leakage in pipe
Illustration			
Cause	◆ Water like rainwater enters into the pipe ◆ Condensate in pipes	◆ Oxyde results from braze welding. ◆ Impurities like dirtiness, oil stain in pipes.	◆ Braze welding is not firm. ◆ Improper treatment to bell mouth or incorrect force moment.
Sign	◆Blockage of expansion valve or capillary. ◆ No cold air or hot air ◆ Lube oil is aging ◆Malfunction of compressor	◆ Blockage of expansion valve or capillary. ◆ No cold air or hot air ◆ Lube oil is aging ◆ Malfunction of compressor	◆ Poor refrigerant ◆No cold air or hot air ◆Exhaust temperature gets increased ◆ Lube oil is aging ◆ Malfunction of compressor
Precaution	Maintaining pipes Washing Vacuum dring	◆ The same to the left ◆ Never use the equipment which has used other kind of refrigerants.	◆Conform to basic operation instruction to braze welding ◆Conform to basic operation instruction to treatment to bell mouth ◆ Conform to basic operation instruction to flange connection ◆ Pressure maintaining and leak detection

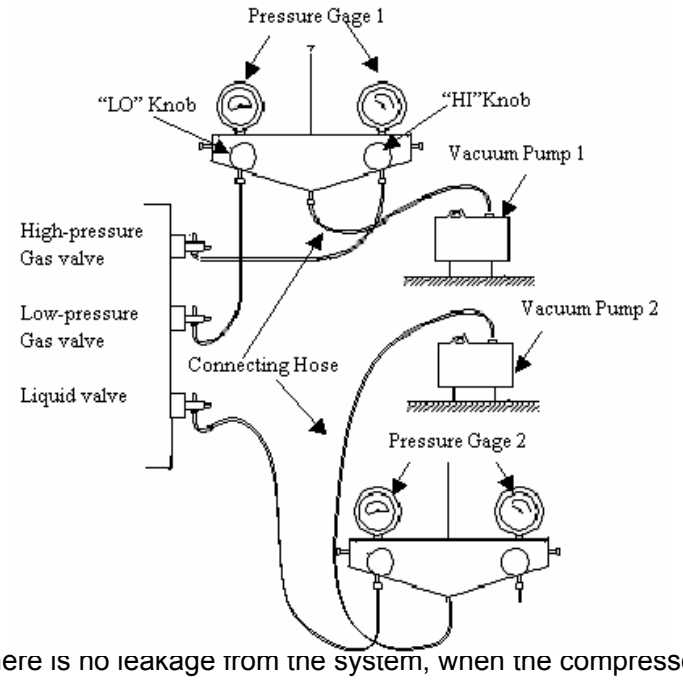
Filling of Refrigerant and Test Run

● Filling of Refrigerant(it shall be done by professionals)

1. Before shipped out from manufacturer, the outdoor unit has been filled with refrigerant. Additional refrigerants may be filled when carrying out site connection of pipelines.

2. Check the liquid valve, the low pressure gas valve and the high pressure gas valve of the outdoor unit. The valves shall be completely shut off.

3. Suck the air in indoor unit and in connecting pipe from liquid valve, low -pressure gas valve and high-pressure gas valve of outdoor unit with two vacuum pumps and two sets of pressure gages(one of the two pressure gages only needs one manometer, the other unused manometer should be turned off). Refer to following Fig.



4. After confirming that there is no leakage from the system, when the compressor is not in operation, charge additional R410A Refrigerants with specified amount to the unit through the filling opening of the liquid pipe valve of the outdoor unit.

● Calculating Mass of Additional Refrigerant

1. Mass of Refrigerant in the outdoor unit When Delivered from Manufacturer

	GMV-Pdhm224W/Na-M	GMV-Pdhm280W/Na-M	GMV-Pdhm335W/Na-M
Amount of Refrigerant Filled (kg)	12	12	13

	GMV-Pdhm400W/Na-M	GMV-Pdhm450W/Na-M	——
Amount of Refrigerant Filled (kg)	14	15	——

Notes:

☆ The mass of refrigerant in the outdoor unit when delivered from manufacturer does not include the mass of additional refrigerant needed by the piping connecting the outdoor unit and the indoor unit.

☆ As the length of the connecting pipe is decided on site, the amount of additional refrigerant shall be decided depending on the size and the length of the liquid pipe used on site.

2. Method of Calculating Mass of Additional Refrigerant to Be Filled (Based on the Liquid Pipe)

Mass of Additional Refrigerant to Be Filled =∑ Length of Liquid Pipe × Amount of Additional Refrigerant to Be Filled Per Meter of Liquid Pipe

Amount of Additional Refrigerant to Be Filled Per Meter of Liquid Pipe（kg/m）					
Φ22.2	Φ19.05	Φ15.9	Φ12.7	Φ9.52	Φ6.35
0.35	0.25	0.17	0.11	0.054	0.022

● Inspection Items after Installation

Check Items	Problems Owing to Improper Installation	Check
Is the installation reliable?	The unit may drop, vibrate or make noises	
Has the gas leakage been checked?	May cause unsatisfactory cooling (heating) effect	
Is the thermal insulation of the unit sufficient?	May cause condensation and water dropping	
Is the drainage smooth?	May cause condensation and water dropping	
Does the power supply voltage accord with the rated voltage specified on the nameplate?	The unit may break down or the components may be burned out	
Are the lines and pipelines correctly installed?	The unit may break down or the components may be burned out	
Has the unit been safely grounded?	Risk of electrical leakage	
Are the models of lines in conformity with requirements?	The unit may break down or the components may be burned out	
Are there any obstacles near the air inlet and outlet of the indoor and outdoor units?	May cause unsatisfactory cooling (heating) effect	
Have the length of refrigerating pipe and refrigerant charge amount been recorded?	It is not easy to decide the charge amount of refrigerant.	

● Test Run

1. Inspection before Test Run

☆ Check if the appearance of unit and the piping are damaged during shipment or handling

☆ Check if the terminals of the electrical components in the unit are loose and if the phase sequence is correct

☆ Check if the rotating direction of the fan is correct

☆ Check if all the valves in the inspections system are all opened.

2. Test Run

☆ After the results of the above inspection items are all accepted, the test run shall be carried out by qualified technicians.

☆ Energize the unit and set the status of the wire controller or the remote controller as ON.

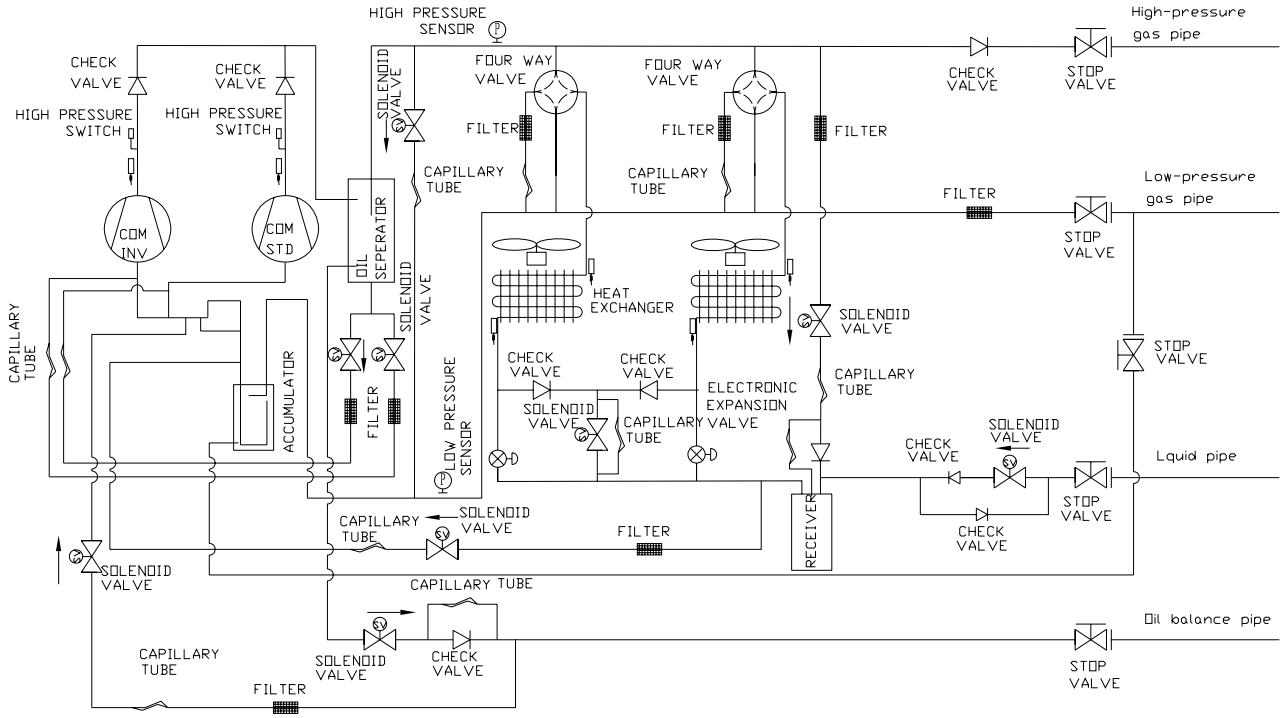
☆ The outdoor fan and the compressor shall automatically start up within one minute.

☆ In case there is abnormal noise after the compressor starts up, immediately shut down the unit and carry out inspection.

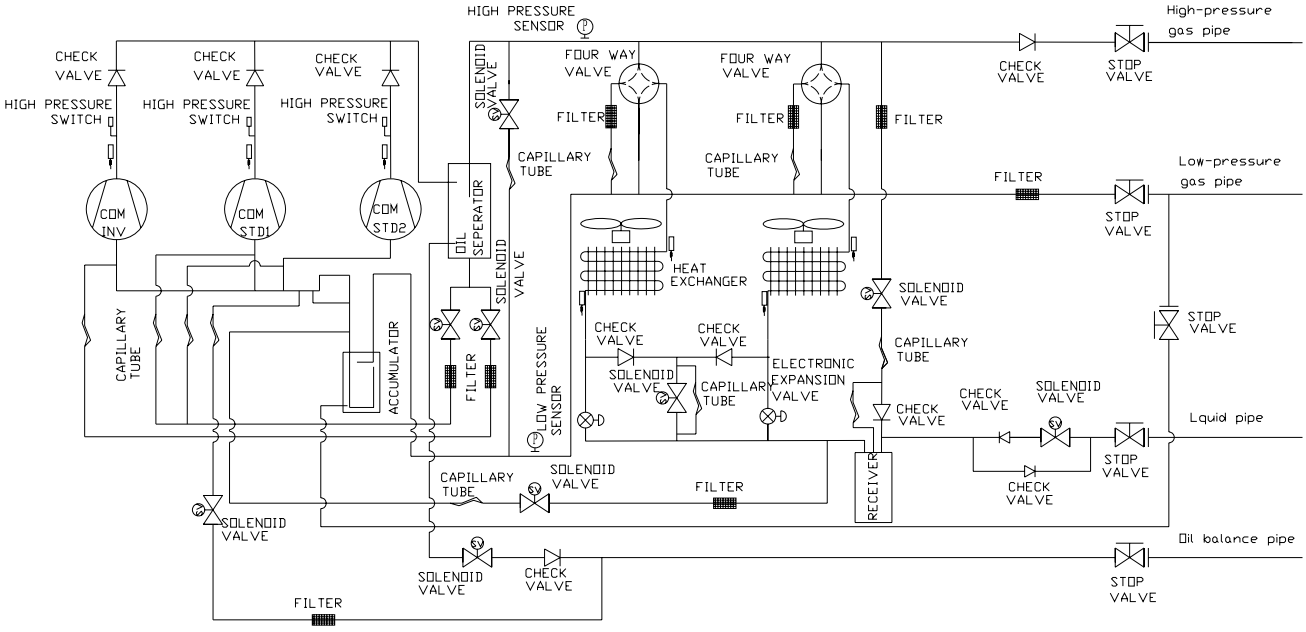
Operating Principle of Muti-split and Heat-recovered Air-Conditioning Unit

●Operating Principle of Muti-Split and Heat-recovery Air-Conditioning Unit

GMV-Pdhm224W/Na-M、GMV-Pdhm280W/Na-M



GMV-Pdhm335W/Na-M、GMV-Pdhm400W/Na-M、GMV-Pdhm450W/Na-M



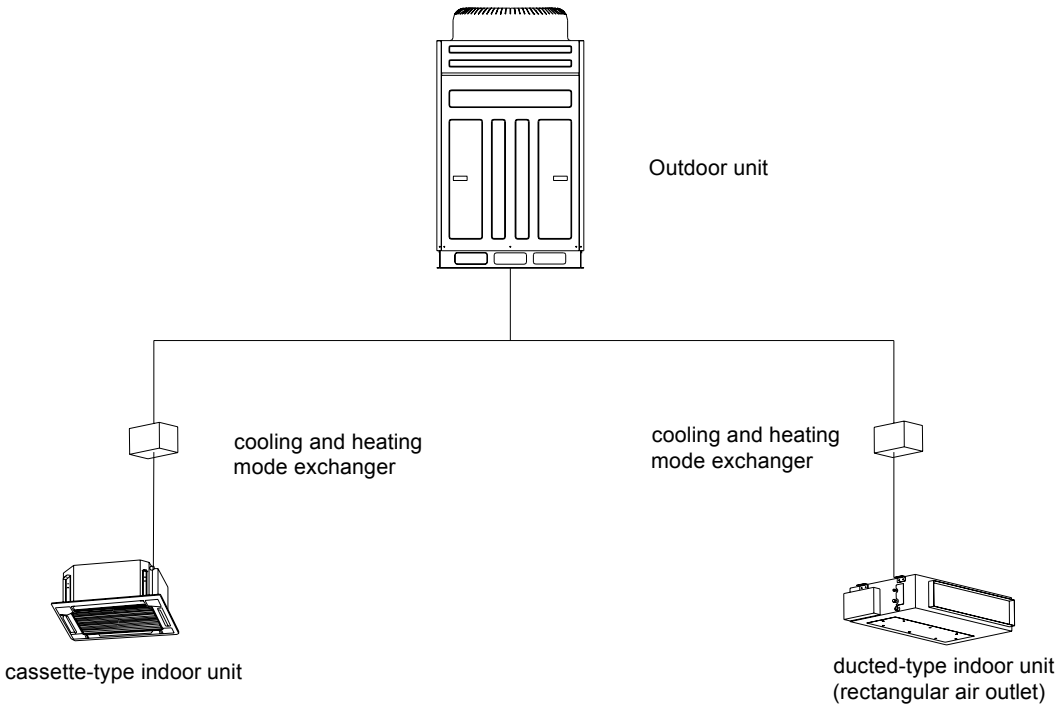
If different indoor units perform cooling and heating operation at the same time, the appliances will enter heat-recovery operation, which will save energy consumption.

Once energized, the indoor unit and outdoor unit begin to run. Refrigerants through liquid pipe will enter into heat exchanger after being under pressured and cooled, and then for cooling it exchanges heat with indoor

air which needs to cool; Refrigerants through refrigerant heat exchanger from high-pressure pipe exchanges heat with indoor air which needs to heat, which makes the purpose of heating of indoor unit realized. At last, all refrigerant through low-pressure gas pipe returns into compressor for next work circularly for air conditioning.

Types of Indoor Units to Be Integrated

Diagram of System Integration


Outdoor unit
cooling and heating mode exchanger
cooling and heating mode exchanger
cassette-type indoor unit
ducted-type indoor unit (rectangular air outlet)

Heat Recovery D.C Inverter Multi-VRF consists of one/two/ three modular outdoor units and multiple indoor units. Each of indoor unit equips a mode exchanger. The indoor unit can be of cassette type and ducted type. The ducted type indoor units can be controlled by remote controller; Cassette type indoor units can be controlled by either remote controller or wire controller. When any one of the indoor units receives an operation order, the outdoor unit will start to operate; when all of the indoor units stop operating, the outdoor unit will stop.

Maintenance Measures

Warning!

● Before cleaning the air-conditioning unit, the unit must stop and the main power supply of the unit must be cut off.

● Do not wet the air-conditioning unit otherwise there will be danger of electric shock. Never use water to wash the air-conditioning unit.

Precaution!

● Volatile liquid such as thinner or gasoline may damage the finish of air-conditioning unit (only use soft dry cloth or cloth damped with neutral cleanser to clean the enclosure of the air-conditioning unit).

● Never use hot water over 45℃ to clean the housing of the air-conditioning unit and otherwise the unit may lose color or deform.

●Do not dry the air filter of the indoor unit above fire and otherwise the filter may burst into flame or deform (remark: filter cleaning shall be done by professionals)

● Inspection at the Beginning of Operational Season

☆ Check the air inlet and outlet of the indoor and outdoor units to confirm there is no blockage.

☆ Check the grounding wire to confirm the grounding is reliable (it shall be done by professionals).

☆ Check the batteries of the remote controller to see if they shall be replaced.

☆ Check if air filter is installed well(it shall be done by professionals).

☆ Check the outdoor unit to see if the installation of it is steady. Contact the service center if there is any abnormal condition.

☆ If the air-conditioning unit shall operate again after a long-term shutoff, set the status of the main power supply switch as “ON” eight hours before the start of operation so as to ensure the smooth startup of the air-conditioning unit.

● Maintenance at the End of the Operational Season

☆ Shut off the main power supply of the air-conditioning unit.

☆ Clean the filter and the enclsoure of the outdoor unit. (it shall be done by professionals)

☆ Remove the dust and foreign articles from the outdoor unit.

☆ If there is any rust on the outdoor unit, apply paint on the position of rust to avoid the expansion of the rust.

For the maintenance measures of different types of indoor units, refer to the operating instructions supplied together with the indoor units.

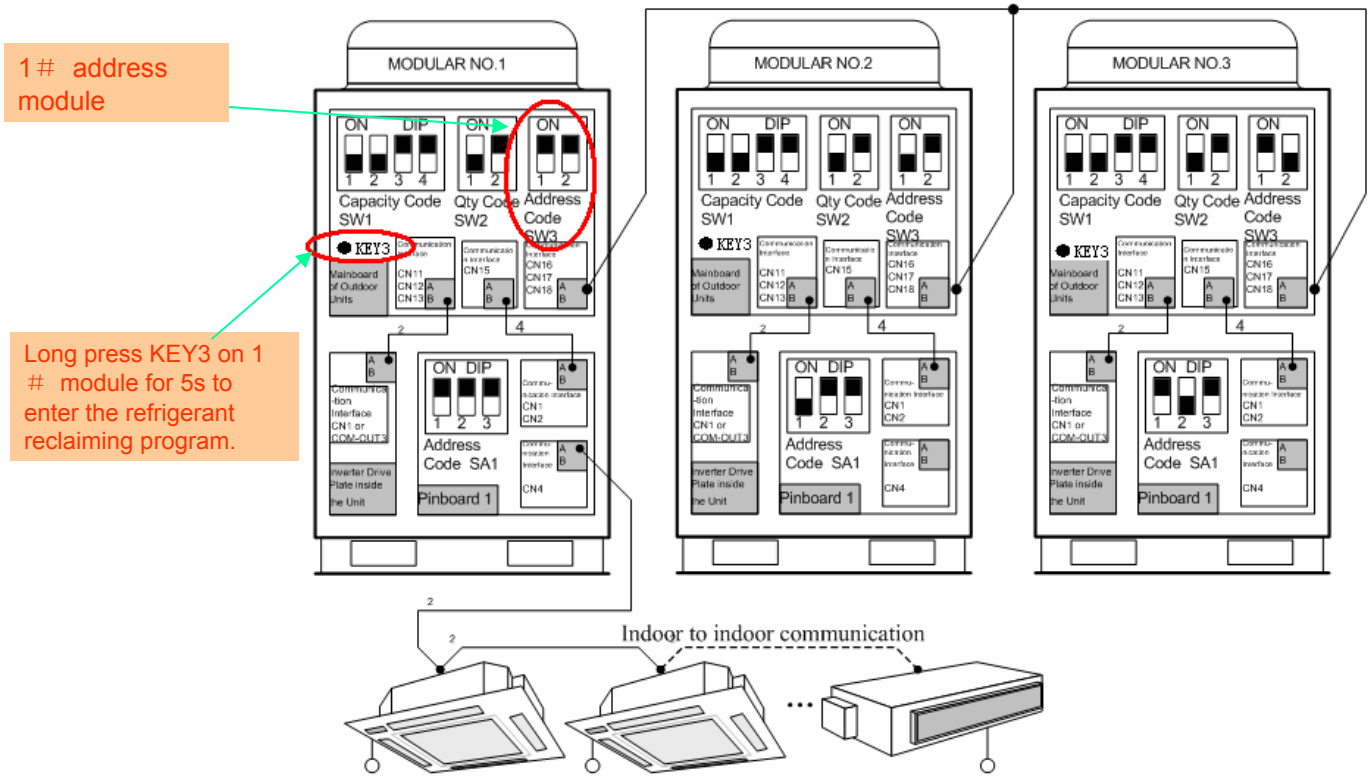
Reclaim refrigerant

Warning!

The reclaiming work shall be done by prefessionals

GREE heat recovery DC inverter multi-connected units system is designed as 3-pipe system. Thus, when refrigerant on the indoor side is needed to be reclaimed to the outdoor side in the treatment of after-sales problems, the following operation matters must be paid attention to.

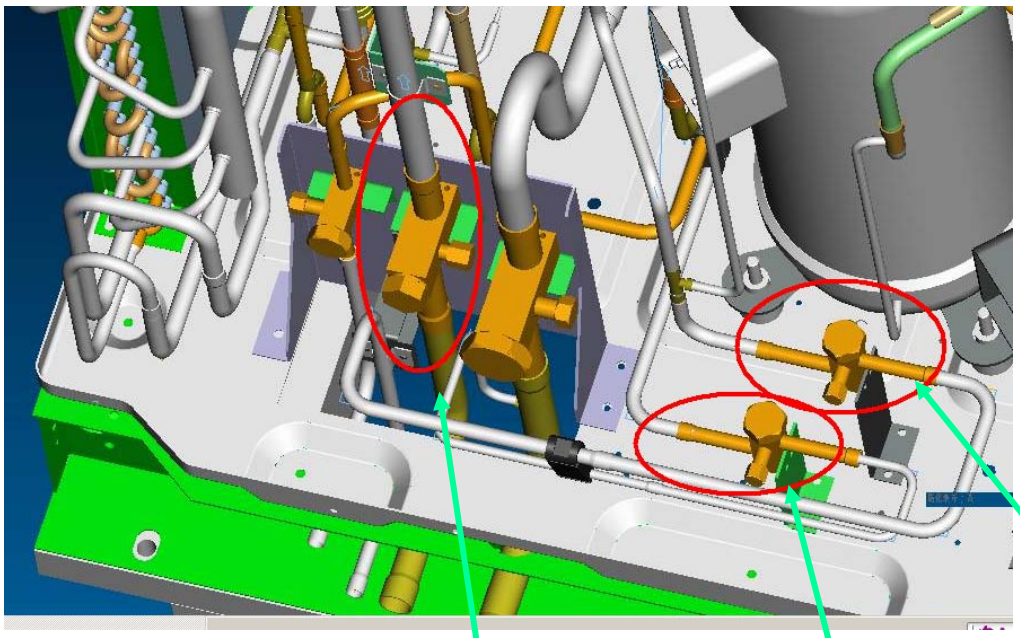
GREE heat recovery DC inverter multi-connected units system has after-sales refrigerant reclaiming processing program. To enter refrigerant recovery mode, KEY3 on 1# module mainboard shall be pressed persistently for 5 seconds, and then all indoor units will work automatically under cooling mode and outdoor compressor start running.



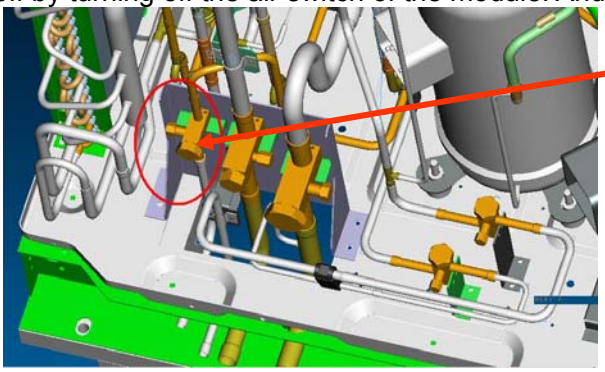
When the system operates 5 minutes after the refrigerant reclaiming program is entered, refrigerant reclaiming can be carried out.

Step 1: valves and oil equalized valves on the high pressure gas piping of all the modules and low pressure refrigerant circulating valve of gas-liquid separator shall be shut off.

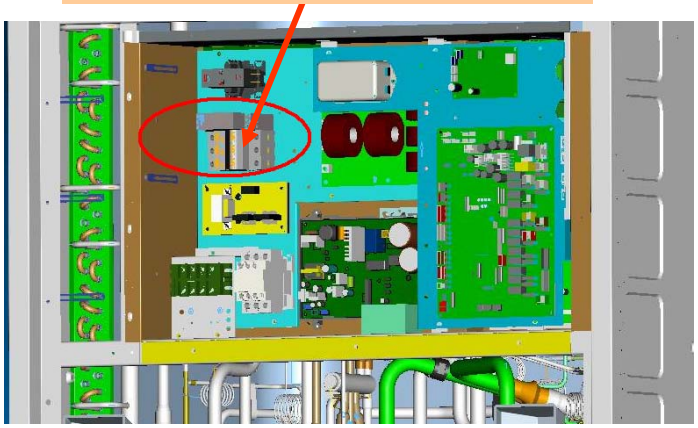
Reclaim refrigerant

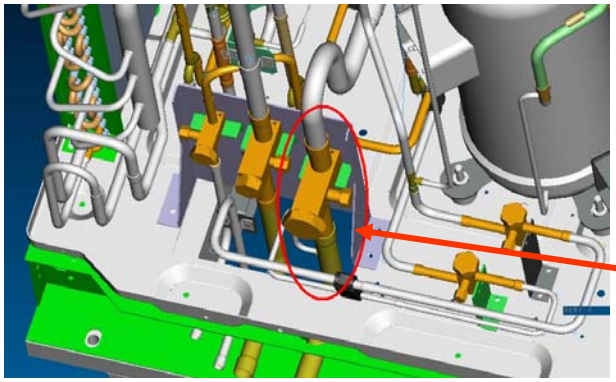

Shut off valve on high pressure gas piping
Shut off gas-liquid separator Low pressure refrigerant circulating valve
Shut off oil equalized valve

Step 2: Valve on the liquid piping of one of the modules shall be shut off, and after 1.5 minute, valve on the low pressure gas piping of the module shall be shut off, and then power supply of the module shall be turned off by turning off the air switch of the module. And then repeat Step 2 on the next module.



Cut off the air switch in the module to switch off the power supply of the module where refrigerant is reclaimed.

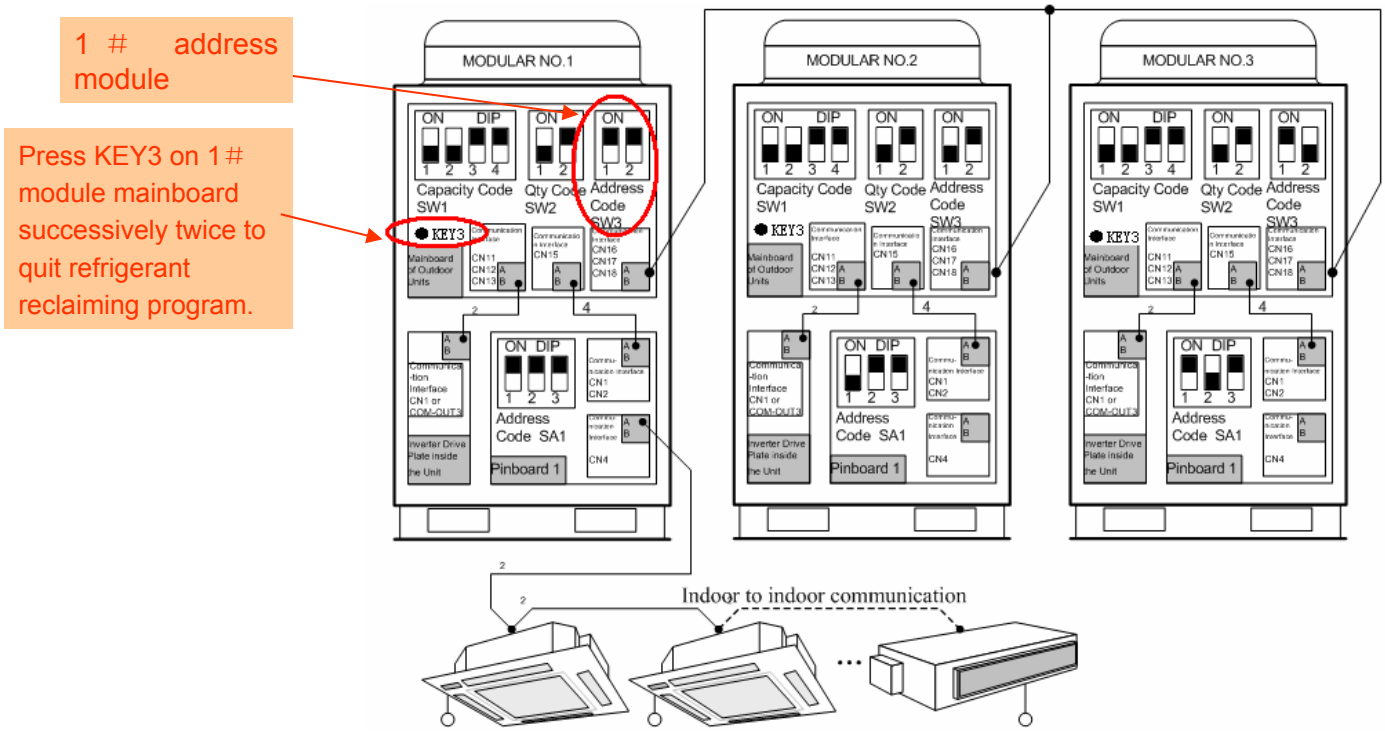




Reclaim refrigerant

Step 3: when low pressure temperature of the refrigerant recovery system of the last module reaches -45℃, valve on the low pressure piping shall be shut off immediately and power supply of the unit shall be switched off immediately. Refrigerant reclaiming finishes.

Note: When the system is executing refrigerant reclaiming program, you can press KEY3 on 1# module mainboard successively twice within 1 second to quit the program.



Troubleshooting

Warning!

- In case of abnormal conditions (such as unpleasant smell), stop the unit and turn off the general power supply immediately, and then contact the service center. Keep on operating after abnormal conditions occur may cause damage to the air-conditioning unit and the accident of electric shock or fire.
- Do not repair the air-conditioning unit by yourself, as wrong repair may cause electric shock or fire. Please contact the service center for repair by professional technicians.

- **Before contacting service center, check the following items:**

Trouble	Cause	Remedial Measures
Unit does not run at all	Power cut	Restart the unit after power supply resumes and the unit shall operate
	Batteries of remote controller are weak	Replace with new batteries
	The control distance is too far for the remote controller	The distance shall be within 8m
Unit operates for a while and then stops immediately	Air inlet or air outlet of indoor unit or outdoor unit is blocked	Remove the obstacles
Abnormal cooling or heating	Air inlet or air outlet of indoor unit or outdoor unit is blocked	Remove the obstacles
	Temperature setting is improper	Adjust the setting of remote controller or wire controller
	Air speed is set too low	Adjust the setting of remote controller or wire controller
	Air supply direction is wrong	Adjust the setting of remote controller or wire controller
	Door or window is open	Close door or window
	Under direct sunshine	Hang curtain or blinders before the window
	Too many people inside the room	--
	Too many heat sources indoors	Reduce heat sources

Troubleshooting

●Note

If the cause of failure cannot be found after all the above items have been inspected, contact the service center and offer the symptom of failure and the model of air-conditioning unit.

●The following conditions are not failures:

"Failure"		Cause
Air-conditioning unit does not run	When the unit is to be started immediately after shutdown	Overload protection switch of the unit causes a 3-minute lag before the startup
	When the unit is energized	1 minute of stand-by time
Unit blows mist	When in cooling operation	Indoor air with high humidity is cooled rapidly
Noise from air-conditioning unit	Light "Clatter" is heard when the unit starts operation	Sound of initial operation of electric expansion valve
	Continuous "Hissing" is heard when the unit is in cooling operation	Flowing sound of gaseous refrigerant in the unit
	Hissing is heard when starting and shutting down the unit	Sound as a result that the flow of gaseous refrigerant stops
	Continuous light hissing during and after operation	Operating sound of drainage system
	Creak is heard during and after operation	Friction sound of positions such as front panel after expansion owing to the change in temperature
	When indoor unit enters into heating mode from cooling/dry/fan/off mode or by contraries, the brief air flowing sound of cooling and heating mode exchanger occurs.	Air flowing sound results from reversing of 4-way valve of cooling and heating mode exchanger.
Air-conditioning unit blows out dust	When starting the unit after long-term shutdown	Dust inside the indoor unit is blown out of the unit
Air-conditioning unit radiates smell	During operation	Smell of the room is sucked into the unit and then is blown out of the unit

Troubleshooting

Trouble and State Display of Mainboard LED of Outdoor Unit。

Definition:

- LED6： Power lamp (red), bright when energized.
- LED5： Operation lamp (green), bright if no error, which indicates that the unit is started; “Dark” indicates the unit is stopped.
- LED4、LED3、LED2、LED1： Error / state indicator (yellow)

1. Trouble of elements

Trouble name	Display of LED						Display of wired remote controller
	LED6	LED5	LED4	LED3	LED2	LED1	
High-pressure sensor error	○	□	○	□	□	□	Fc
Low-pressure sensor error	○	□	○	○	□	□	Fd
Outdoor environment temperature sensor error	○	□	□	●	●	●	F4
System 1 coil-inlet sensor error	○	□	□	●	●	□	F5
System 1 coil-inlet sensor error	○	□	□	●	□	●	F6
System 1 coil-inlet sensor error	○	□	□	●	□	□	F7
System 2 coil inlet temp. sensor fault	○	□	□	●	○	●	F5
System 2 coil-middle sensor error	○	□	□	●	○	□	F6
System 2 coil-exit sensor error	○	□	□	●	●	○	F7
Inverter/Digital exhaust temperature sensor error	○	□	□	□	●	□	F9
Fixed-frequency compressor 1 exhaust temperature sensor error	○	□	□	□	●	●	F8
Fixed-frequency compressor 2 exhaust temperature sensor error	○	□	□	□	●	○	F8
Fixed-frequency compressor 3exhaust temperature sensor error	○	□	□	●	○	○	F8
Inverter/Digital oil temperature / top sensor error	○	□	□	□	□	□	Fb
Fixed-frequency compressor 1 oil temperature / top sensor error	○	□	□	□	□	●	FA
Fixed-frequency compressor 2 oil temperature / top sensor error	○	□	□	●	□	○	FA
Fixed-frequency compressor 3 oil temperature / top sensor error	○	□	□	○	□	●	FA

Legend: bright ○; dark ●;blink□

2.System trouble

Trouble name	Display of LED						Display of wired remote controller
	LED6	LED5	LED4	LED3	LED2	LED1	
High-pressure protection	○	□	●	●	●	□	E1
Low-pressure protection	○	□	●	●	□	●	E3
Exhaust protection	○	□	●	●	□	□	E4
Overcurrent Protection	○	□	●	□	●	●	E5
Oil temperature 85℃ protection	○	□	□	○	□	□	E4
No-refrigerant protection	○	□	□	□	○	●	E3

Legend: bright ○; dark ●;blink□

Troubleshooting

2. Controlling trouble

Trouble name	Display of LED						Display of wired remote controller
	LED6	LED5	LED4	LED3	LED2	LED1	
Capacity dial-up of outdoor unit is wrong	○	□	●	□	●	○	No display
Drive error of outdoor fan / module protection	○	□	○	●	○	○	E5
Drive current error of outdoor fan	○	□	○	●	○	□	E5
Drive voltage protection of outdoor fan	○	□	○	●	○	●	E5
Module overheating protection of outdoor fan	○	□	○	●	●	○	E5
Motor overheating protection of outdoor fan	○	□	○	●	●	●	E5
Overvoltage protection/DC input voltage too high	○	□	○	○	○	○	E5
Air cooling fin/IPM module/PFC module temperature too high	○	□	○	○	○	□	E5
Current sensor fault /current detection circuit fault	○	□	○	○	□	○	E5
Air cooling fin/IPM module/PFC module temp. sensor fault	○	□	○	□	○	○	E5
Compressor overcurrent / compressor current protection	○	□	○	□	○	□	E5
Undervoltage protection / DC input voltage too low	○	□	○	□	□	○	E5
Failed to start	○	□	●	○	○	○	E5
PFC abnormality	○	□	●	○	○	●	E5
Compressor clogged	○	□	●	○	○	□	E5
Drive module reset / IPM module reset	○	□	●	○	●	○	E5
Open phase, tripping	○	□	●	○	●	□	E5
Fault from variable frequency drive to main control communication	○	○	●	●	●	□	E5
IPM abnormality/IPM module protection	○	□	□	○	○	○	E5
Overspeed protection	○	□	□	○	○	●	E5
Sensor connection protection	○	□	□	○	○	□	E5
Temperature drift protection	○	□	□	○	●	○	E5
AC contactor protection	○	□	□	○	●	●	E5
Overcurrent or drive system abnormality / compressor overload protection	○	□	●	□	●	●	E5
AC overcurrent protection (input side)	○	□	○	□	○	●	E5
Driver board environment temperature sensor error	○	□	○	□	●	○	E5

Legend: bright ○; dark ●;blink□

4. Communication trouble

Trouble name	Display of LED						Display of wired remote controller
	LED6	LED5	LED4	LED3	LED2	LED1	
Communication error between submodule and the master board	○	□	●	□	●	□	E6 displayed on indoor unit under adaptor board failing to communicate with the master board

Inconsistency of Dial-up quantity with communication quantity	○	□	●	□	○	○	E6 displayed on indoor unit under adaptor board failing to communicate with the master board
Communication error between master board of outdoor unit and adaptor board	○	□	●	□	□	●	E6
Communication error between outdoor board and fan speed regulation board	○	□	●	□	□	○	E5

Legend: bright ○; dark ●;blink□

5. State display

Trouble name	Display of LED						Display of wired remote controller
	LED6	LED5	LED4	LED3	LED2	LED1	
Other modules are at fault, and failure-free modules display	○	□	●	□	○	●	No display
Forcible cooling	●	□	●	●	●	●	TEST
Forcible heating	□	●	●	●	●	●	TEST
Forcible stop	□	□	●	●	●	●	TEST
Defrost	○	□	●	□	□	□	MELT
Oil return	○	□	□	□	○	□	When heating, MELT No display when cooling
Oil equilibrium	○	□	□	□	□	○	No display
Vacuum mode	●	●	□	□	□	□	No display
IPLV test mode	○	○	●	●	○	○	No display
Online test mode	○	○	●	●	○	●	No display
When current module is the master module	○	X	●	●	●	○	No display

Legend: bright ○; dark ●;blink□

● Aftersales Service

☆ In case the air-conditioning unit has any quality problem or you have any inquiry, please contact the local aftersales service agency.

Operating Temperature Range and Rated Work Conditions of the Unit

●Outdoor Operating Temperature Range of the Air-conditioning Unit

Running mode	Outdoor dry-bulb temp（℃）
Cooling	-10 ~48
Heating	-20 ~27
Cooling and Heating	-10 ~20

Note: Cooling and Heating mode includes principle-cooling mode, principle-heating mode and heat-recovered only mode.

●Rated Work Conditions of the Unit

	Condition at the Indoor Side			Condition at the Outdoor Side	
	Running Mode	Dry-bulb Temperature℃	Wet-bulb Temperature℃	Dry-bulb Temperature℃	Wet-bulb Temperature℃
Rated Cooling	Cooling	27	19	35	24
Rated Heating	Heating	20	15	7	6
Rated Cooling and Heating	Cooling	27	19	7	6
	Heating	20	15		

Performance Parameters of the Unit

Remarks:

1. All the data of the cooling/heating capacity and the noise are measured before the unit is shipped out from manufacturer.

2. All the parameters in the tables below are measured under the rated work condition. Such parameters in the specifications are subject to change so the data on the nameplate shall govern.

● Performance Parameters of the Outdoor Unit

Basic Model			GMV-Pdhm224W/Na-M	GMV-Pdhm280W/Na-M	GMV-Pdhm335W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	22.4	28.0	33.5
		Btu/h	76,428.8	95,536.0	114,302.0
	Heating	kW	25.0	31.5	37.5
		Btu/h	85,300.0	95,536.0	114,302.0
Power Input	Cooling	kW	5.5	7.5	9.23
	Heating	kW	5.8	7.7	9.38
COP	Cooling	W/W	4.07	3.73	3.63
	Heating	W/W	4.31	4.09	4.00
ECOP	Cooling & Heating	W/W	6.8		6.5
Capacity Control		%	20～100	14～100	14～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	2	2	3
Air Flow Rate		m^3/min	190		232
Dimensions（H×W×D）		mm	1670×930×770		1670×1340×770
Package Dimensions（H×W×D）		mm	1850×1010×850		1850×1420×850
Net Weight		kg	260	260	372
Gross Weight		kg	284	284	390
Sound Pressure Level		dB(A)	58	58	61
Refrigerant	Type	—	R410A		
	Charge	kg	12.0	12.0	14.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ9.5	Φ9.5	Φ12.7
	Suction Gas	mm	Φ22.2	Φ22.2	Φ28.6
	Discharge Gas	mm	Φ19.1	Φ19.1	Φ19.1
Number of Max. Connectable Indoor Unit		—	13	16	19
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	6.0×5	6.0×5	10.0×5

Performance Parameters of the Unit

Basic Model			GMV-Pdhm400W/Na-M	GMV-Pdhm450W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system	
Capacity	Cooling	kW	40.0	45.0
		Btu/h	136,480.0	153,540.0
	Heating	kW	45.0	50.0
		Btu/h	153,540.0	170,600.0
Power Input	Cooling	kW	12.45	14.3
	Heating	kW	11.20	13.9
COP	Cooling	W/W	3.21	3.14
	Heating	W/W	4.02	3.60
ECOP	Cooling & Heating	W/W	6.5	
Capacity Control		%	10～100	10～100
Compressor	Type	—	Hermetically sealed scroll type	
	NO.	—	3	3
Air Flow Rate		m^3/min	232	
Dimensions（H×W×D）		mm	1670×1340×770	
Package Dimensions（H×W×D）		mm	1850×1420×850	
Net Weight		kg	402	402
Gross Weight		kg	420	420
Sound Pressure Level		dB(A)	61	61
Refrigerant	Type	—	R410A	
	Charge	kg	16.0	16.0
Refrigerant Oil		—	Refer to the nameplate of the compressor	
Piping Connections	Liquid	mm	Φ12.7	Φ12.7
	Suction Gas	mm	Φ28.6	Φ28.6
	Discharge Gas	mm	Φ22.2	Φ22.2
Number of Max. Connectable Indoor Unit		—	23	26
Ratio of the Connectable Indoor Unit		—	50%～135%	
Recommended Power Cord		mm^2×NO.	10.0×5	10.0×5

Performance Parameters of the Unit

Multple Model			GMV-Pdhm504W2/Na-M	GMV-Pdhm560W2/Na-M	GMV-Pdhm615W2/Na-M
Uses combination of			GMV-Pdhm224W/Na-M；GMV-Pdhm280W/Na-M	GMV-Pdhm280W/Na-M；GMV-Pdhm280W/Na-M	GMV-Pdhm280W/Na-M；GMV-Pdhm335W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	50.4	56.0	61.5
		Btu/h	171,964.8	191,072.0	209,838.0
	Heating	kW	56.5	63.0	69.0
		Btu/h	192,778.0	214,956.0	235,428.0
Power Input	Cooling	kW	13.0	15.0	16.7
	Heating	kW	13.5	15.4	17.1
COP	Cooling	W/W	3.88	3.73	3.68
	Heating	W/W	4.19	4.09	4.04
Capacity Control		%	9～100	8～100	7～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	4	4	5
Air Flow Rate		m^3/min	190+190		190+232
Dimensions（H×W×D）		mm	(1670×930×770)+(1670×930×770)	(1670×930×770)+(1670×930×770)	(1670×930×770)+(1670×1340×770)
Net Weight		kg	260+260	260+260	260+372
Sound Pressure Level		dB(A)	62	62	62
Refrigerant	Type	—	R410A		
	Charge	kg	12.0+12.0	12.0+12.0	12.0+14.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ15.9	Φ15.9	Φ15.9
	Suction Gas	mm	Φ28.6	Φ28.6	Φ28.6
	Discharge Gas	mm	Φ22.2	Φ28.6	Φ28.6
	Oil Balancee	mm	Φ12.7	Φ12.7	Φ12.7
Number of Max. Connectable Indoor Unit		—	29	32	36
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	25.0×5	25.0×5	35.0×5

Performance Parameters of the Unit

Multple Model			GMV-Pdhm680W2/Na-M	GMV-Pdhm730W2/Na-M	GMV-Pdhm800W2/Na-M
Uses combination of			GMV-Pdhm280W/Na-M；GMV-Pdhm400W/Na-M	GMV-Pdhm280W/Na-M；GMV-Pdhm450W/Na-M	GMV-Pdhm400W/Na-M；GMV-Pdhm400W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	68.0	73.0	80.0
		Btu/h	232,016.0	249,076.0	272,960.0
	Heating	kW	76.5	81.5	88.0
		Btu/h	261,018.0	278,078.0	300,256.0
Power Input	Cooling	kW	20.0	21.8	25.0
	Heating	kW	18.9	21.6	22.4
COP	Cooling	W/W	3.40	3.35	3.20
	Heating	W/W	4.05	3.77	3.93
Capacity Control		%	6～100	6～100	6～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	5	5	6
Air Flow Rate		m^3/min	190+232		232+232
Dimensions（H×W×D）		mm	(1670×930×770)+(1670×1340×770)	(1670×930×770)+(1670×1340×770)	(1670×1340×770)+(1670×1340×770)
Net Weight		kg	260+402	260+330	402+402
Sound Pressure Level		dB(A)	62	63	63
Refrigerant	Type	—	R410A		
	Charge	kg	12.0+16.0	12.0+16.0	16.0+16.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ15.9	Φ19.1	Φ19.1
	Suction Gas	mm	Φ34.9	Φ34.9	Φ34.9
	Discharge Gas	mm	Φ28.6	Φ28.6	Φ28.6
	Oil Balance	mm	Φ12.7	Φ12.7	Φ12.7
Number of Max. Connectable Indoor Unit		—	40	43	47
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	35.0×5	35.0×5	35.0×5

Performance Parameters of the Unit

Multple Model			GMV-Pdhm850W2/Na-M	GMV-Pdhm900W2/Na-M	GMV-Pdhm960W3/Na-M
Uses combination of			GMV-Pdhm400W/Na-M； GMV-Pdhm450W/Na-M	GMV-Pdhm450W/Na-M； GMV-Pdhm450W/Na-M	GMV-Pdhm280W/Na-M； GMV-Pdhm280W/Na-M； GMV-Pdhm400W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	85.0	90.0	96.0
		Btu/h	290,020.0	307,080.0	327,552.0
	Heating	kW	95.0	100.0	108.0
		Btu/h	324,140.0	341,200.0	368,496.0
Power Input	Cooling	kW	26.8	28.6	27.5
	Heating	kW	25.1	27.8	26.6
COP	Cooling	W/W	3.17	3.15	3.49
	Heating	W/W	3.78	3.60	4.06
Capacity Control		%	5～100	5～100	5～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	6	6	7
Air Flow Rate		m^3/min	232+232		190+190+232
Dimensions（H×W×D）		mm	(1670×1340×770)+ (1670×1340×770)	(1670×1340×770)+ (1670×1340×770)	(1670×930×770)+ (1670×930×770)+ (1670×1340×770)
Net Weight		kg	402+402	402+402	260+260+402
Sound Pressure Level		dB(A)	63	63	64
Refrigerant	Type	—	R410A		
	Charge	kg	16.0+16.0	16.0+16.0	12.0+12.0+16.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ19.1	Φ19.1	Φ19.1
	Suction Gas	mm	Φ34.9	Φ34.9	Φ34.9
	Discharge Gas	mm	Φ28.6	Φ28.6	Φ28.6
	Oil Balance	mm	Φ12.7	Φ12.7	Φ12.7
Number of Max. Connectable Indoor Unit		—	50	53	56
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	35.0×5	35.0×5	50.0×5

Performance Parameters of the Unit

Multple Model			GMV-Pdhm1010W3/Na-M	GMV-Pdhm1070W3/Na-M	GMV-Pdhm1130W3/Na-M
Uses combination of			GMV-Pdhm280W/Na-M； GMV-Pdhm280W/Na-M； GMV-Pdhm450W/Na-M	GMV-Pdhm280W/Na-M； GMV-Pdhm335W/Na-M； GMV-Pdhm450W/Na-M	GMV-Pdhm280W/Na-M； GMV-Pdhm400W/Na-M； GMV-Pdhm450W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	101.0	107.0	113.0
		Btu/h	344,612.0	363,378.0	385,556.0
	Heating	kW	113.0	119.0	126.5
		Btu/h	385,556.0	406,028.0	431,618.0
Power Input	Cooling	kW	29.3	31.0	34.3
	Heating	kW	29.3	31.0	32.8
COP	Cooling	W/W	3.45	3.44	3.29
	Heating	W/W	3.86	3.84	3.86
Capacity Control		%	5～100	5～100	4～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	7	8	8
Air Flow Rate		m^3/min	190+190+232	190+232+232	190+232+232
Dimensions（H×W×D）		mm	(1670×930×770)+ (1670×930×770)+ (1670×1340×770)	(1670×930×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×930×770)+ (1670×1340×770)+ (1670×1340×770)
Net Weight		kg	260+260+402	260+372+402	260+402+402
Sound Pressure Level		dB(A)	64	64	64
Refrigerant	Type	—	R410A		
	Charge	kg	12.0+12.0+16.0	12.0+14.0+16.0	12.0+16.0+16.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ19.1	Φ19.1	Φ19.1
	Suction Gas	mm	Φ41.3	Φ41.3	Φ41.3
	Discharge Gas	mm	Φ28.6	Φ34.9	Φ34.9
	Oil Balance	mm	Φ12.7	Φ12.7	Φ12.7
Number of Max. Connectable Indoor Unit		—	59	64	64
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	50.0×5	70.0×5	70.0×5

Performance Parameters of the Unit

Multple Model			GMV-Pdhm1180W3/Na-M	GMV-Pdhm1250W3/Na-M	GMV-Pdhm1300W3/Na-M
Uses combination of			GMV-Pdhm280W/Na-M； GMV-Pdhm450W/Na-M； GMV-Pdhm450W/Na-M	GMV-Pdhm400W/Na-M； GMV-Pdhm400W/Na-M； GMV-Pdhm450W/Na-M	GMV-Pdhm400W/Na-M； GMV-Pdhm450W/Na-M； GMV-Pdhm450W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	118.0	125.0	130.0
		Btu/h	402,616.0	426,500.0	443,560.0
	Heating	kW	131.5	138.5	145.0
		Btu/h	448,678.0	472.562.0	494,740.0
Power Input	Cooling	kW	36.1	39.3	41.1
	Heating	kW	35.5	36.3	39.0
COP	Cooling	W/W	3.27	3.18	3.16
	Heating	W/W	3.70	3.82	3.72
Capacity Control		%	4～100	4～100	4～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	8	9	9
Air Flow Rate		m^3/min	190+232+232	232+232+232	232+232+232
Dimensions（H×W×D）		mm	(1670×930×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)
Net Weight		kg	260+402+402	402+402+402	402+402+402
Sound Pressure Level		dB(A)	64	65	65
Refrigerant	Type	—	R410A		
	Charge	kg	12.0+16.0+16.0	16.0+16.0+16.0	16.0+16.0+16.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ19.1	Φ19.1	Φ19.1
	Suction Gas	mm	Φ41.3	Φ41.3	Φ41.3
	Discharge Gas	mm	Φ34.9	Φ34.9	Φ34.9
	Oil Balance	mm	Φ12.7	Φ12.7	Φ12.7
Number of Max. Connectable Indoor Unit		—	64	64	64
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	70.0×5	70.0×5	70.0×5

Performance Parameters of the Unit

Multple Model			GMV-Pdhm1350W3/Na-M	GMV-Pdhm1410W4/Na-M	GMV-Pdhm1460W4/Na-M
Uses combination of			GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M	GMV-Pdhm280W/Na-M; GMV-Pdhm280W/Na-M; GMV-Pdhm400W/Na-M; GMV-Pdhm450W/Na-M	GMV-Pdhm280W/Na-M; GMV-Pdhm280W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	135.0	141.0	146.0
		Btu/h	460,620.0	481,092.0	498,152.0
	Heating	kW	150.0	158.0	163.0
		Btu/h	511,800.0	539,096.0	556,156.0
Power Input	Cooling	kW	42.9	41.8	43.6
	Heating	kW	41.7	40.5	43.2
COP	Cooling	W/W	3.15	3.37	3.35
	Heating	W/W	3.60	3.90	3.77
Capacity Control		%	4～100	3～100	3～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	9	10	10
Air Flow Rate		m^3/min	232+232+232	190+190+232+232	190+190+232+232
Dimensions（H×W×D）		mm	(1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×930×770)+ (1670×930×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×930×770)+ (1670×930×770)+ (1670×1340×770)+ (1670×1340×770)
Net Weight		kg	402+402+402	260+260+402+402	260+260+402+402
Sound Pressure Level		dB(A)	65	65	65
Refrigerant	Type	—	R410A		
	Charge	kg	16.0+16.0+16.0	12.0+12.0+16.0+16.0	12.0+12.0+16.0+16.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ19.1	Φ22.2	Φ22.2
	Suction Gas	mm	Φ41.3	Φ44.5	Φ44.5
	Discharge Gas	mm	Φ34.9	Φ34.9	Φ41.3
	Oil Balance	mm	Φ12.7	Φ12.7	Φ12.7
Number of Max. Connectable Indoor Unit		—	64	66	69
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	70.0×5	95.0×5	95.0×5

Performance Parameters of the Unit

Multple Model			GMV-Pdhm1515W4/Na-M	GMV-Pdhm1580W4/Na-M	GMV-Pdhm1630W4/Na-M
Uses combination of			GMV-Pdhm280W/Na-M; GMV-Pdhm335W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M	GMV-Pdhm280W/Na-M; GMV-Pdhm400W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M	GMV-Pdhm280W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	151.5	158.0	163.0
		Btu/h	516,918.0	539,096.0	556,156.0
	Heating	kW	169	176.5	181.5
		Btu/h	576,628.0	602,218.0	619,278.0
Power Input	Cooling	kW	45.3	48.6	50.4
	Heating	kW	44.9	46.7	49.4
COP	Cooling	W/W	3.34	3.25	3.23
	Heating	W/W	3.76	3.78	3.67
Capacity Control		%	3～100	3～100	3～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	11	11	11
Air Flow Rate		m^3/min	190+232+232+232		
Dimensions（H×W×D）		mm	(1670×930×770)+ (1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×930×770)+ (1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×930×770)+ (1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)
Net Weight		kg	260+372+402+402	260+402+402+402	260+402+402+402
Sound Pressure Level		dB(A)	65	65	66
Refrigerant	Type	—	R410A		
	Charge	kg	12.0+14.0+16.0+16.0	12.0+16.0+16.0+16.0	12.0+16.0+16.0+16.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ22.2	Φ22.2	Φ25.4
	Suction Gas	mm	Φ44.5	Φ44.5	Φ54.1
	Discharge Gas	mm	Φ41.3	Φ41.3	Φ41.3
	Oil Balance	mm	Φ12.7	Φ12.7	Φ12.7
Number of Max. Connectable Indoor Unit		—	71	74	77
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	95.0×5	95.0×5	95.0×5

Performance Parameters of the Unit

Multple Model			GMV-Pdhm1700W4/Na-M	GMV-Pdhm1750W4/Na-M	GMV-Pdhm1800W4/Na-M
Uses combination of			GMV-Pdhm400W/Na-M; GMV-Pdhm400W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M	GMV-Pdhm400W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M	GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M; GMV-Pdhm450W/Na-M
Power Supply			3phase,380～415V,50HZ,4wires system		
Capacity	Cooling	kW	170.0	175.0	180.0
		Btu/h	580,040.0	597,100.0	614,160.0
	Heating	kW	187.5	195.0	200.0
		Btu/h	639,750.0	665,340.0	682,400.0
Power Input	Cooling	kW	53.6	55.4	57.2
	Heating	kW	50.2	52.9	55.6
COP	Cooling	W/W	3.17	3.16	3.15
	Heating	W/W	3.74	3.69	3.60
Capacity Control		%	3～100	3～100	3～100
Compressor	Type	—	Hermetically sealed scroll type		
	NO.	—	12	12	12
Air Flow Rate		m^3/min	232+232+232+232		
Dimensions（H×W×D）		mm	(1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)	(1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)+ (1670×1340×770)
Net Weight		kg	402+402+402+402	402+402+402+402	402+402+402+402
Sound Pressure Level		dB(A)	66	66	66
Refrigerant	Type	—	R410A		
	Charge	kg	16.0+16.0+16.0+16.0	16.0+16.0+16.0+16.0	16.0+16.0+16.0+16.0
Refrigerant Oil		—	Refer to the nameplate of the compressor		
Piping Connections	Liquid	mm	Φ25.4	Φ25.4	Φ25.4
	Suction Gas	mm	Φ54.1	Φ54.1	Φ54.1
	Discharge Gas	mm	Φ41.3	Φ41.3	Φ41.3
	Oil Balance	mm	Φ12.7	Φ12.7	Φ12.7
Number of Max. Connectable Indoor Unit		—	80	80	80
Ratio of the Connectable Indoor Unit		—	50%～135%		
Recommended Power Cord		mm^2×NO.	95.0×5	95.0×5	95.0×5

Note：

① The rated cooling capacity data is measured under the following work condition:
Indoor Temperature as 27℃(80.6℉)DB,19℃(66.2℉)WB;
Outdoor Temperature as 35℃(95℉)DB, 24℃(75.2℉) WB.

② The rated heating capacity data is measured under the following work condition:
Indoor Temperature as 20℃(68℉)DB, 15℃(59℉)WB;
Outdoor Temperature as 7℃(44.6℉)DB,6℃(42.8℉)WB.

③ The rated heat recovery ECOP data is measured under the following work condition:
Cooling indoor Temperature as 27℃(80.6℉)DB,19℃(66.2℉)WB; Heating indoor Temperature as 20℃(68℉)DB, 15℃(59℉)WB .Outdoor Temperature as 7℃(44.6℉)DB,6℃(42.8℉)WB. Rated cooling capacity/ Rated heatling capacity=0.8~1.2.
ECOP=(Cooling capacity + Heating capacity)/Power input.

④ Equivalent piping length:7.5m,level difference 0m.

⑤ Sound level: Anechoic chamber conversion value, measured at a point 1m in front of the unit at a height of 1.5 m. During actual operation ,these values are normally somewhat higher as a result of ambient conditions.

⑥ The filling amount of R410A operating fluid in the table is specified without considering perpendicular throw and pipe connection, so it is required to fill additional refrigerant depending on actual circumstances when the installation is carried out.

⑦ The data in the tables is subject to change so the data on the nameplate shall govern.

This product must not be disposed together with the domestic waste. This product has to be disposed at an authorized place for recycling of electrical and electronic appliances.

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